THE

DENTAL COSMOS:

A

MONTHLY RECORD OF DENTAL SCIENCE.

Devoted to the Interests of the Profession.

EDITED BY

J. H. McQUILLEN, M.D., D.D.S.
GEO. J. ZIEGLER, M.D.

Observe, Compare, Reflect, Record.

VOL. XII.

PHILADELPHIA:
SAMUEL S. WHITE, PUBLISHER,
CHESTNUT STREET, CORNER OF TWELFTH.
1870.

LIST OF CONTRIBUTORS

TO

VOLUME XII.

Abbott, J. T.	Manchester, Iowa.
Allan, George S., D.D.S.	New York, N. Y.
Allen, Harrison, M.D.	Philadelphia, Pa.
Ambler, H. L., D.D.S., M.D.	Cleveland, Ohio.
Amer, W. Nichols	Lancaster, Pa.
Barrett, J. M., D.D.S.	Wilkesbarre, Pa.
Bennett, C. H.	Liverpool, N. Y.
Berhard, Alexander, D.D.S.	New York, N. Y.
Berhard, Henry, D.D.S.	" "
Blake, E.	Boston, Mass.
Bogue, E. A., M.D., D.D.S.	New York, N. Y.
Boice, Alonzo, D.D.S.	Philadelphia, Pa.
Bronson, W. A., M.D.	New York, N. Y.
Brown, Seneca B.	Fort Wayne, Ind.
Carroll, Alfred L., M.D.	New York, N. Y.
Case, H. N.	Little Rock, Ark.
Clapp, Dwight M.	Geneva, Switzerland.
Codman, J. T.	Boston, Mass.
Coe, F. W.	Vergennes, Vt.
Coggswell, Alfred C., D.D.S.	Halifax, N. S.
Crosby, F. K., D.D.S.	Boston, Mass.
Cutler, S. P., M.D., D.D.S.	Holly Springs, Miss.
Darby, Frank B.	Owego, N. Y.
Dennett, H. E.	Gloucester, Mass.
Driscoll, W. E.	Bedford, Ind.
Eaton, A. V.	Anamosa, Iowa.
Evans, Thos. W., M.D., D.D.S.	Paris, France.
Ford, Arthur C., D.D.S.	Atlanta, Ga.
Fouché, John	Knoxville, Tenn.
Francis, C. E., D.D.S.	New York, N. Y.
Garretson, James E., M.D.	Philadelphia, Pa.
Garnsey, Charles A. P.	Chicago, Ill.
Gerhart, H., D.D.S.	Lewisburg, Pa.
Gilmour, H. L.	Philadelphia, Pa.
Haley, T.	Biddeford, Me.
Hanks, E. F.	Rahway, N. J.
Harriman, George B.	Boston, Mass.
Hirschfeld, Henriette, D.D.S.	Berlin, Prussia.
Hodson, J. F. P., D.D.S.	New York, N. Y.
Horne, William C., D.D.S.	" "
Houghton, Charles L.	Poughkeepsie, N. Y.

Ives, C. F.	New York, N. Y.
Jack, Louis, D.D.S.	Philadelphia, Pa.
Jarvis, O. A.	New York, N. Y.
Kagey, H. V.	Arcola, Ill.
King, Edward J.	Decatur, Mich.
Kingsley, Prof. Norman W.	New York, N. Y.
Ladd, H. W., D D.S.	Newport, Me.
Latimer, C. E., D.D.S.	New York, N. Y.
Latimer, J. S., D.D.S.	" "
McManus, James, D.D.S.	Hartford, Conn.
McQuillen, J. H., M.D., D.D.S.	Philadelphia, Pa.
Marvin, C. A., D.D.S.	Brooklyn, N. Y.
Mattison, G. W., M.D.	Middleville, Mich.
Meredith, L. Phil., D.D.S.	Cincinnati, Ohio.
Mitchell, T. Elihu	Pulaski, Tenn.
Moore, Thomas T., D.D.S.	Columbia, S. C.
Morgan, M., D.D.S.	Springfield, Mass.
Mosher, George H.	Jackson, Mich.
Neall, E. H., D.D.S.	Philadelphia, Pa.
Neelands, J., L.D.S.	Lindsay, Canada.
Neidich, Geo. W., D.D.S.	Carlisle, Pa.
Overholser, D. L.	Logansport, Ind.
Perkins, H. M., D.D.S.	Middleborough, Mass.
Perkins, J. A., D.D.S.	Amesbury, Mass.
Perry, S. G., D.D.S.	New York, N. Y.
Pike, Charles E., D.D.S.	Philadelphia, Pa.
Rederick, A. J.	Sioux City, Iowa.
Register, H. C., D.D.S.	Philadelphia, Pa.
Rice, W. W.	Great Barrington, Mass.
Roberts, E. J., D.D.S.	Augusta, Me.
Sanborn, J. F.	Tabor, Iowa.
Shumway, T. D.	Plymouth, Mass.
Smith, C. Stoddard	Springfield, Ill.
Smith, D. D., D.D.S.	Philadelphia, Pa.
Smith, J. H.	New Haven, Conn.
Smith, Samuel M.	Monroe, Wis.
Spencer, M. A.	Orrville, Ohio.
Stellwagen, Thos. C., M.D., D.D.S.	Philadelphia, Pa.
Stevens, Thos. S., D.D.S.	Trenton, N. J.
Suesserott, J. L., M.D., D.D.S.	Chambersburg, Pa.
Thayer, W. Irving, D.D.S.	Chelsea, Mass.
Towle, George F.	Lewiston, Me.
Trueman, W. H., D.D.S.	Philadelphia, Pa.
Truman, James, D.D.S.	" "
Waite, W. H., D.D.S., L.D.S.	Liverpool, Eng.
Wadsworth, H. Nichols, D.D.S.	Washington, D. C.
Welchens, Samuel, D.D.S.	Lancaster, Pa.
Westcott, A., M.D., D.D.S.	Syracuse, N. Y.
White, James W.	Philadelphia, Pa.
Willard, De Forest, M.D.	" "
Wingate, John D., D.D.S.	Bellefonte, Pa.
Ziegler, George J., M.D.	Philadelphia, Pa

CONTENTS OF VOL. XII.

ORIGINAL COMMUNICATIONS.

MISCELLANY.

PROCEEDINGS OF SOCIETIES.

CLINICAL REPORTS.

EDITORIAL.

BIBLIOGRAPHICAL.

CORRESPONDENCE.

SELECTIONS.

PERISCOPE.

THE

DENTAL COSMOS.

NEW SERIES.

VOL. XII. PHILADELPHIA, JANUARY, 1870. No. 1.

ORIGINAL COMMUNICATIONS.

FISSURES.

BY JAMES TRUMAN, D.D.S., PHILADELPHIA, PA.

PROFESSOR OF DENTAL HISTOLOGY AND OPERATIVE DENTISTRY IN PENNSYLVANIA COLLEGE OF DENTAL SURGERY.

WHETHER the filling of teeth be regarded as a subject already barren of interest, or a field so thoroughly explored that no new result can be obtained, or still a theme open to further explorations, it cannot be denied that much more needs to be said to change bad practices if not bad theories. It is certainly astonishing that the progress in some directions has not kept pace with the great advances made in others. In this category may be placed the knowledge and treatment of those depressions in teeth technically termed fissures. As the proper definition of this word embraces all chasms made by separation of parts, or any narrow furrow or depression left normally in the structure, it is eminently proper to class all lines of decay met with on teeth under this comprehensive heading.

These are found primarily upon the masticating surfaces of molars, superior and inferior; superior and inferior bicuspids; on the buccal, lingual, and palatine surfaces of molars, and not unfrequently upon the basilar ridge of the central incisors. Secondarily, they are of frequent occurrence on teeth somewhat worn, extending in an antero-posterior direction. In this case they are generally isolated, having no connection with any of the remaining normal depressions, and are wholly caused by caries.

It may be regarded as an axiom in operative dentistry that all depressions, however produced, predispose to caries. It is immaterial whether these be normal to the structure, or whether they are the legitimate results of the various disturbing influences constantly producing a separation of the tissue into cracks—the result in both cases must be the same.

To understand thoroughly why caries is the ultimate result in all

such depressions, it may not be unprofitable to trace the progress of decay as here represented. All surfaces not entirely smooth are liable to depositions from the oral secretions. These are largely composed of organic matter in extremely minute subdivision. This deposition will necessarily be in proportion to the number and depth of the depressions. The fact is too often lost sight of that, microscopically considered, but few surfaces are free from fissures. Cracks may be present too minute for unassisted observation, yet large enough to furnish a depository for secretions and eventual destruction. This easily demonstrated fact is too often forgotten in the finishing of the borders of fillings. No amount of solidity will compensate for the defective finish at the marginal surface. If the rough surface be subjected to the constant natural cleansing process of mastication, the result may not be injurious, but in the treatment of teeth nothing should be left to the uncertainty of chance. If the depression be on the inferior teeth, the result will advance with greater rapidity, as the force of gravitation tends to hold the destructive agent more continuously in contact with the tissue.

That acid conditions will be present upon every rough surface, needs hardly a word to convince any reflecting observer. It is made plainly evident by the litmus test, and without that, is still further made apparent by the increased sensibility of all such exposed surfaces. A very simple and every-day proof of this is to be found on the margins of those fillings that may have been left with a rough finish for a future sitting to complete. In many cases it will require but a few hours to increase the sensibility at this point to such an extent as to be almost unbearable to the patient. The irritation thus manifested is plainly caused by acid depositions upon the peripheral portions of the tubular structure of the dentine, as it is here that the greatest amount of sensation exists. The remedy in this case is to make the rough surface a perfectly finished one, and sensibility disappears.

If, then, so short a time is required to work out such serious results, it cannot be a subject for speculation how soon the same depositions will produce the destruction of the tissue where the defect is more clearly pronounced. The time in which this will be manifested clearly depends on two causes,—the density of the teeth and the assiduity with which they are cleansed by their possessor. As soon as the acid secretion finds a lodgment, the work of destruction commences. It will be found by careful observation, that the growth of cryptogamic plants or fungi proceeds in due proportion to the increase of the acidity and the destruction of the tissue. Whether we accept the view or not that these are the sole causes of caries, it must be admitted that they exist in immense quantities, and advance in their growth in the dentine with extraordinary rapidity. My own view of this matter has been fully expressed elsewhere, and it is unnecessary to repeat it here, further

than to say, that I am more and more confirmed in the opinion that this growth of fungi is the principal cause of the destruction and also of the peculiar color attendant upon caries. If, then, we may assume that every defective surface will afford a nursery for the growth of germs tending to the destruction of the tissue, does it not become a matter of grave importance that all such defects should receive prompt and careful attention at the hands of the conscientious practitioner? Will it answer to be satisfied with the mere filling of the central cavity while these dangerous conduits of disease are left to ruin the work sooner or later? Certainly not, and yet there are many professing large experience who wholly reject this plain requirement, and are prepared to denounce those who maintain an opposite practice. *I regard it as positive malpractice to allow any fissure to remain unfilled where the slightest evidence of softening of enamel exists*, and am satisfied that this cannot be successfully refuted.

The first duty of the operator is to consider that which confers the greatest benefit on his patient, and his knowledge must be sufficiently exact to form a correct prognosis of the case in hand. It is certainly unjust—nay, absolutely dishonest—to defer to a future day what is palpably required to be performed at the present. The assumption that time will so enlarge the defect as to render its treatment a matter of far less difficulty, but increases the seriousness of the evil and the culpability of the operator. This is not the reasoning of one aiming at perfection, but of one who regards immediate results paramount to any good to be obtained in the future. If it be admitted that teeth may be left for further decay, a door is left open for an amount of malpractice too serious to contemplate without some feeling of indignant remonstrance.

The amount of decay is only limited by the quantity of tissue to be destroyed, and, as is well known, does not confine its progress to any particular direction. It may penetrate a circumscribed area, enter the tubes inclosed therein, and extend an indefinite distance beneath the enamel. This is peculiarly the case in those portions of the dentine immediately beneath the enamel or linear depressions. It frequently does not extend a line in diameter, and with a depth variable in extent, but always considerable. This is found remarkably characteristic of that depression found on the lateral margins of masticating surfaces of molars where the fissure insensibly terminates in a shallow, or, as I term it, linear depression, extending over the buccal, palatine, or lingual surfaces. It will here give a slight bluish cast to the fissure above when positive caries may not have attacked the latter. It seems difficult to reconcile this apparent contradiction of well-settled opinions, that decay progresses with the greatest freedom in a line following the course of the tubes. This is certainly in a direction trans-

verse to these, and can only be accounted for under the theory, which I am not prepared to defend, that a larger amount of defective tissue must exist there than at other portions. From some imperfect observations, I have been led to the conclusion that spaces in dentine are to be found in much larger proportion near the peripheral surfaces of the crown tubules than at any other part, and as they almost invariably occupy a transverse position to the direction of the tubes, it may reasonably be inferred that their share in the progress of destruction is of some importance.

Treatment.—In view, then, of the important relation which the treatment of these fissures bears to a continuation of a healthy structure, it becomes a matter of great moment to adopt correct modes of treatment. This, where the destructive process is clearly defined, is simple, requiring no elaborate statement to enable one to perform it successfully. Such, however, is not always the case, and the young operator will frequently be at a loss to decide when and where to remove tissue and fill.

All lines of decay admit of but one mode of preparation; the chisel and drill being the two principal instruments used. The most effective drill for this purpose is that which is known as a retaining-point drill. The best form of these, in my judgment, is the simple square-edged instrument, somewhat resembling a carpenter's chisel; hence I have termed it a chisel drill. While there is but little variation in treatment, the points of difference may be worthy of notice. On the masticating surface of molars the fissures, unless isolated, extend from a central cavity of decay. It is only necessary in this case to prepare the central cavity in accordance with understood rules. The retaining-point drill should then be inserted at the remotest point of the fissure, and carried to the depth the caries may have extended, or at least sufficiently deep to anchor the filling. This will vary, but will seldom be less than the $\frac{1}{16}$ of an inch. The walls are then to be cut with parallel sides, and continued to the central cavity. If the central fissure, which extends over the buccal, palatine, or lingual surfaces, indicates decay, the best mode of preparation is by passing a separating file through it. This gives it exactly the form desired. With the same deep retaining pit on the buccal or palatine surface, the gold may without difficulty be built up until the central cavity is reached. The fissure that is almost invariably found between the cusps of bicuspids is prepared by entering the drill at both extremities and cutting parallel walls in the intervening tissue. These fissures in the two classes of teeth described are representative of this form of caries wherever found.

While the treatment is comparatively simple, the experience necessary to decide when to fill comes only by long and careful observation. The amount of destruction cannot always be determined by the discoloration. This will not invariably be exhibited, and it is not an unfre-

quent occurrence to have tooth structure extensively softened with no mark to indicate it. It is plain, therefore, that dependence should never be placed on the eye alone, but a sharp instrument should always be used in addition. If there be any doubt, give the tooth the benefit of the doubt, and fill the fissure. With this treatment invariably adopted, there is but slight opportunity for further decay, provided proper care has been taken in other parts of the operation. On the other hand, carelessness in treating these, or omission to excavate them, will result not only in their own increased destruction, but also of the central cavity, if one be present. No amount of fallacious reasoning can justify such malpractice, unworthy the advanced intelligence of the dental profession.

DISEASES OF THE MAXILLARY SINUS.

BY C. E. LATIMER, D.D.S., NEW YORK, N. Y.

In the *British Journal of Dental Science* for November appears a leading article which forcibly illustrates the importance of more attention on the part of the general surgeon and physician to diseases arising from devitalized teeth; and, in order to attract attention to the subject, I wish to report briefly some of the cases which have occurred in my practice, showing the same neglect in physicians here—confining myself, however, to diseased conditions of the maxillary sinus.

Case I. October, 1858. Mrs. W., of Fort Lamar, Ga. Patient came to me suffering, as she supposed, from cancer. The history of the case is briefly as follows: During the preceding winter she had taken a severe cold, which gave her neuralgic pains in her head, finally locating in one eye, producing a degree of inflammation and throbbing pain that was almost unendurable. She was treated by the physician of the place, and also by a doctor of considerable skill from Athens, who assured her that it was a case of cancerous affection, which must ultimately prove fatal. Their treatment did very little good. When I saw her the sight of one eye was so obscured by the swelling, and by the presence of pus, which was so profuse that it almost entirely prevented her from sewing or reading. She was obliged to keep a cloth upon the face to absorb the pus which was constantly discharging. The odor was quite offensive. The idea of dying from cancer had so preyed upon her mind as to make her nervous, pale, and haggard. The excoriated skin around the eye and upon the cheek, caused by the presence of the acrid pus, gave the case a very repulsive appearance.

Upon examination, I discovered the seat of trouble to be in the antrum of Highmore, caused by abscessed roots of a superior molar tooth. The pus had perforated the orbital plate, and found exit at the inner canthus of the eye. The case was cured by extracting the diseased

roots and syringing the antrum according to the directions of Harris. The delight of the patient when, upon the extraction of the roots, a new channel of exit for the pus was secured, and upon being assured that she would soon be cured, can be imagined only by those who have contemplated the terrible sufferings so commonly attendant upon death from cancer.

Case II. July, 1862. Mrs. M., of this city (New York), had been treated by different physicians for more than two years for catarrh, pains in the head, and inflammation of the stomach. None of those who had examined the case—among whom was the late Dr. Mott—seem to have conceived the true origin of all this trouble.

Among other symptoms pointing to disease of the maxillary sinus, may be mentioned the peculiar sensations, as of the presence of fluid in the antrum, produced by throwing the head backward and forward; the dripping of pus down the throat at night, and expectorating a hardened lump in the morning; the tenderness of some of the teeth under percussion, or of the antrum walls upon pressure, and the peculiar odor always attendant upon this disease in its advanced stages.

This patient did not complain of ever experiencing pain in her teeth, and was very slow to believe that the difficulty originated there. I administered chloroform and extracted the diseased teeth, with the effect of causing a profuse discharge of exceedingly offensive pus, the odor of which immediately filled the room. Upon passing a probe through the openings thus made into the antrum, I found the spongy bones more extensively necrosed than in any other case I ever examined. The sight of one of the eyes had been considerably impaired by the encroachment of the disease. In order to prevent the openings through the gums from closing, and thus interfering with the treatment and the free discharge of pus, I introduced gold tubes through the openings left by the removal of the palatine roots of the superior first molars of either side.

These tubes were closed by caps soldered to springs, so arranged as to slide into the tubes, but which could be removed by the patient with the finger nail when the syringe was to be used. The patient left the city before the cure was completed, but the last I heard of her (about two years ago), she was still wearing the gold tubes, and the plate supporting artificial teeth, with cavities cut in the sides to give room for the gold cap.

Case III. Oct. 1863. Mrs. P., of this city, came to me several times to consult in regard to her teeth. I found that the superior lateral incisors had been filled with the pulps exposed, causing their death and disease of both antra. She was very nervous and emaciated, and had been confined to her room for weeks, under the care of a homœopathic

physician. Her doctor pronounced my diagnosis of the case wholly erroneous, and her friends would not hear of having the teeth extracted. At length, however, finding that she was not benefited by treatment, and feeling confident that her general health could not be good until this local disease was cured, she came to me without the knowledge or consent of her physician or friends, took nitrous oxide gas, and had one of the lateral incisors removed. The copious discharge of pus decided the case, and she soon returned and had the other tooth extracted. I prepared a suitable lotion, and gave her a syringe to use. The discharge down her throat ceased, and her health began to improve at once. She was delighted at the change, and has remained my fast friend ever since. I am not aware that her physician ever confessed his error.

Case IV. June, 1858. Mrs. B., of Danielsville, Ga., had an offensive discharge from one nostril, and suffered a great deal of pain in the head. Her physician attributed it to catarrh, and treated her accordingly, without material benefit. When the case came into my hands, I found the mouth full of old roots, which had produced abscesses, discharging into the antrum, thence through the nostrils. The first thing done in treating the case was to extract twenty roots. In using the syringe, the patient was directed to hold the head well forward, so that the fluid should flow through the nostrils instead of down the throat. A cure was soon effected.

Case V. March, 1861. Mr. D., near Lexington, Ga., came to me to have a superior dens sapientia extracted, but I happened to be out of the office, and he went to a physician, who broke off the crown, leaving the roots. After vainly endeavoring to remove them, he told the patient that the gum would soon grow over them, and it would do just as well as though they were out. Contrary to his prediction, however, disease set in, involving the antrum. He then came to me, desiring treatment. I explained the nature and position of the disease as well as I was able, by means of anatomical specimens and by reports in books of nearly similar cases, and urged the importance of immediately extracting the fractured roots and thoroughly treating the case. He promised to have it done, but wished to delay it until later in the day. While seeing a company of soldiers start for Richmond, his prejudices were aroused by being told that he ought not to patronize a Yankee, so that he did not return to me.

I learned that he went to Athens to get the roots extracted, but without success. The physician who attended him was a man of unusual skill and experience, and being intimate with him, I volunteered my opinion of the best course of treatment for the case, but it was not regarded. He pronounced it "something malignant." On the night before I planned to take my departure from the sunny South, to

escape service in the rebel army, I received a note from Mr. D. (who was now confined to the house), urging me to come and treat his case. Having sent my instruments away, and having no desire to tarry longer in the land of the Philistines, I replied that it would be impossible for me to attend him, but wrote, urging him to send for Dr. Chase, of Augusta, as the nearest man qualified to treat him properly. I afterward learned that Dr. Chase had left the South before me, and also that the patient died not long after.

Case VI. July, 1866. Miss S., of this city, had disease of the right antrum, produced by an abscessed root which had been excised and a partial plate set over it. The disease had continued about five years before I saw the case, and discharged through the roof of the mouth on two occasions, these discharges being preceded by several weeks of the most intense suffering. The patient felt confident that the disease originated in the excised root, from unmistakable symptoms, but the three physicians who attended her declared this impossible; two of them urged the importance of a surgical operation to remove the tumor in the roof of the mouth, while the third, a surgeon of eminence, exhibited a skull to the patient, and pointed out the location of the disease, to prove the impossibility of any connection with the teeth. The case yielded promptly to treatment after I had removed the diseased root; but there still remains a projection from the roof of the mouth as a lasting argument in favor of specialties in the healing art.

The remedies employed in treating the foregoing cases have been those advised by Harris in his works, and such as I have seen recommended in the journals, including solution of chloride of zinc, cider vinegar, Labarraque's solution, etc. I have had the best success, however, when using Darby's prophylactic fluid, commencing with the full strength, and gradually diluting it until the cure was effected. It acts like a charm. I have no doubt carbolic acid diluted to just the right strength, and gradually weakened as the case improved, would answer a good purpose.

With regard to the article alluded to at the head of this paper, allow a little space, as its author—who extracted undecayed inferior incisors as unhesitatingly as he would pull a sliver from the flesh—is but the representative of a class which, I am sorry to say, is numbered by thousands on this side of the water.

Thirteen years ago my preceptor gave me this rule: "Always extract an ulcerated tooth at sight;" but I am thankful that a brighter day has dawned for suffering humanity, and now a dentist who can read has no excuse for not curing nearly all abscessed teeth that are brought to him for treatment. This being foreign from my subject, however, I will only give a few hints which I hope may prove useful to some earnest

brother still groping in the dark. For abscessed teeth, where there is no fistula, merely rinse the cavity with a jet of warm water from the syringe; then, after drying, put in a drop of solut. carbolic acid, covering loosely with a pellet of cotton dipped in ess. wintergreen, cinnamon, sassafras, or any other pleasant flavoring.

On the next day the roots may be cleansed and treated in the usual way with carbolic acid and tinct. iodine. But never seal up such a tooth and retain the gas generated by sloughing, or do anything which shall force the pus through the foramen, until you have first neutralized the poison by the use of a powerful antiseptic. In all cases where there is a fistula formed, and no unusual soreness exists, the roots may be at once cleaned out, and iodine and carbolic acid pumped through the root, by means of a broach wound with a little cotton dipped in the medicine.

I believe there is danger of overmedication, and thus retarding the cure. As soon as the offensive odor of the pus is removed, if more treatment is required, dilute the medicine gradually and lengthen the time between dressings. Of course, the time required for curing different cases will depend upon the extent of the disease, the general health and diathesis of the patient, and upon the weather. I do not expect much improvement during storms or easterly winds; but, as a general rule, I think two thorough dressings sufficient for a majority of cases, allowing nature to complete the cure. I employ carbolic acid in all cases in which I formerly used creasote, thus avoiding the offensive odor and taste, and with gratifying results.

Where pain is experienced, as is often the case when first presented, open into the pulp cavity with as little irritation to the tooth as possible; rinse with tepid water, then drop in a little chloroform and laudanum, applying it also to the gum.

If a fistula is pointing outwardly upon the gum, hold ice upon the place for a few minutes, or a pellet of cotton wet with chloroform, laudanum, and spts. camphor, until a keen lancet can be used almost painlessly to evacuate the pus. Prescribe a mild aperient, plain diet, without fat meats or other carbons, and hot mustard-bath for the feet, accompanied by friction. Avoid all poultices and fomentations, save perhaps a roasted fig upon the gum, when hastening solution. Use tinct. iodine and tinct. aconite upon the gum, and in severe cases of congestion use cantharidal collodion, taking the precaution to place a tent of cotton or a piece of foil over the gum after the pellicle has formed, so as to protect the cheek. Instruct the patient to sleep upon the other side, to prevent heating the face and increasing the congestion. Leeching is beneficial, but so unpleasant that I rarely advise it now, since other means answer so well.

RANULA, FROM THE LEFT SUBLINGUAL GLAND, IN THE TISSUES OF THE NECK.

BY JAMES E. GARRETSON, M.D., PHILADELPHIA, PA.

The exceeding rarity of the following described case will commend the noting of it to the professional reader.

First, it was noticed that the parts beneath the chin of the patient began to soften and grow broad; freedom of motion was lost in the jaw, and a slight sense of difficulty was experienced in speech as the result of stiffness about the tongue, the mucous floor of the mouth being quite indurated. In the course of four months a tumor, evidently cystic and fully the size of an ordinary orange, occupied the front of the neck, but happily concealed by the heavy beard of the patient.

Presenting himself for treatment, a diagnosis was secured through the aid of an exploring needle; this valuable instrument exhibited not only that the tumefaction was a cyst, but gave some idea of its contents. An operation was performed by making a reasonable incision directly in the median line of the neck, passing into the cyst. The contents, a great mass of lymph-like matter, filling a large glass, issued as a continuous rope; in color and consistence it was like thin calves'-feet jelly.

Washing the cavity thoroughly with warm alum-water, compresses were carefully adjusted to the parts, and sustained by bandages passing over the forehead. In two weeks, without any trouble, the parts seemed to have united and the cyst to be obliterated.

One month later, the patient again presented himself. The tumor was rapidly re-forming; the cyst evidently had not been destroyed; it was now the size of a walnut. A few days later, a second operation was performed, precisely as in the first instance. The contents of the tumor differed, however, at least in color, having the same colloid consistence, but being blood-red. After the incision, determined on obliterating the cavity. I syringed it with the officinal tincture of iodine, undiluted, stuffing the cyst loosely with cotton. I this time succeeded in effecting a perfect cure; but the swelling resulting from the inflammation was so great that it was only by leeches, cathartics, and diaphoretics, conjoined with the closest attention, extending over a period of four days, that I succeeded in saving the life, for two whole days the patient being unable to swallow even teaspoonful measures of water, and breathing with the greatest difficulty.

What was this tumor? Evidently a hydro-hematocele, the starting-point of the lesion being, I think, in a sublingual gland. It might be suggested that, had it belonged to this gland, the swelling would have exhibited itself more in the mouth. My reason for inferring that it was so associated, lay in the fact that a blunt probe passed into the cavity

could readily be felt in the position of the left of these bodies, in the mouth.

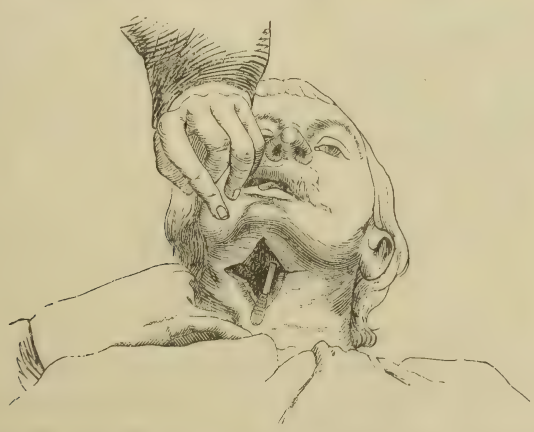
* * * * * * * *

The preceding history of this case is one of the illustrations offered in the chapter on Ranula, published in my work on the "Diseases and Surgery of the Mouth and Associate Parts;" it was written four months after every evidence existed as to the completeness of a cure.

As a coincidence, it occurred that, on the very day on which the perfected proofs of this chapter were put into my hands (the form being struck off), this patient again presented himself, the neck exhibiting every evidence of a return of the tumor.

I now determined on and practiced an operation which exposes the case in its most instructive light, and which has, I must believe, necessarily resulted in a permanent cure.

As illustrated in the accompanying diagram, which is from a photograph secured at the time of operation, a crucial incision was made, exposing, in the retraction of the flaps, the common deep fascia of the neck, which fascia constituted the floor of the cyst, and was, in appearance and consistence, apparently natural.



Passing into a sinus in the deep fascia, and emerging from the mouth, the reader observes the probe. The orifice of this sinus was very small, and was only seen after the parts had been thoroughly cleansed; the track was exceedingly tortuous, and was only passed after several attempts, and only at last by the experimental bending of the probe.

On reaching the floor of the mouth, it was evident enough that the instrument struck the sublingual gland, as without effort this body could be thrust upward from its bed. To thus elevate and dissect out the organ, which was done, was a matter of no difficulty.

To complete the operation, the walls of the cyst were slightly cauterized with the solid stick of nitrate of silver, the flaps laid in place, and secured with the necessary stitches of interrupted suture; adhesion was secured by compresses continued over a month.

Examination of the resected gland discovered upon its under surface a break in its continuity, evidently pathological and of long standing; thus was demonstrated the ranulous character of the tumor. Little by little had the salivary secretion worked this passage downward, securing, by its slow progress, an adventitious tissue, or walled sinus.

Looked at from the cervical base, one would naturally have viewed the sinus as being made by a prolongation of the fascia, so precisely did it look as though a tubular cul-de-sac had elongated itself until it had met and associated itself with the base of the gland.

The question of the location of this tumor is not without a special interest.

Does it prove the existence of a supra-hyoid bursa described by some anatomists, and searched for in vain by many others? If such bursa had not, in this particular case at least, an existence, how shall we as naturally explain the presence of the perfect cyst which formed the tumor?

A second point of interest lies in the fact of the reaching of the gland described in the first diagnosis made months before. This, it would seem, could only have been the result of a rare accident, which on that occasion directed the probe into the sinus, and gave to the parts that favorable position which made the passage a direct one.

REPORTS OF SOCIETIES.

BY COMMON SENSE.

There is no department of a dental journal in which one would naturally expect to find fresher or more practical matter than in that devoted to the reports of the proceedings of dental societies; and yet, by some general and persistent, but unaccountable misapprehension on the part of secretaries, there is as a rule no portion of any of the periodicals devoted to dental literature so absolutely barren of profitable reading as the pages devoted to these reports. Nor is there, it is to be presumed, any editorial labor so irksome and unsatisfactory as the effort to make such contributions presentable—to accommodate the writers of the reports and the societies they represent—and at the same time avoid cumbering the pages of the magazine with a mass of material of no possible value to any one except the members of the particular society reported—and to them only as affording easy reference to elections and appointments.

The pages of any of our journals will illustrate the force of these observations; and yet, in all probability, most of the reports, empty and profitless as they are, have been subjected to an editorial pruning, reducing them to less than half their original dimensions.

Taking up almost any of these reports, they seem to be exact copies of the secretary's minutes, giving in uninteresting and tedious detail all the business routine of the meeting; the place, not merely the town, but the hall or private residence in which they assembled; the hour at which the association (composed perhaps of a half dozen members) was called to order by the president; the reading of the minutes, their adoption on motion of Dr. A., of ———, seconded by Dr. B., of ———; the reading of the report of the treasurer, showing the amount of money received and expended, and the balance in the treasury (about $1.31); the motion of Dr. C., of ———, seconded by Dr. D., of ———, that the report of the treasurer be received, which motion having been carried, Dr. E., of ———, moved, and Dr. F., of ———, seconded, that the secretary be authorized to procure a new book in which to record the proceedings.

Other motions and resolutions of like importance, with names and residences of all concerned, follow; then a motion to proceed to the election of officers; a list of the gentlemen elected; the fact that the retiring president made a very able and interesting address, which was well received and elicited considerable applause.

Then, on motion of Dr. G., of ———, duly seconded, Dr. H., of ———, and Dr. J., of ———, were appointed a committee to conduct the newly-elected president to the chair, who, on being deposited there, returned thanks for the honor conferred, expressed doubts of his fitness for the position, but pledged himself to an impartial and faithful discharge of his duties; that the address was well received, and a copy requested for publication.

Dr. J., of ———, and Dr. K., of ———, being present, were, on motion of Dr. L., of ———, invited to participate in the proceedings, the doctors acknowledging the courtesy in well-timed remarks.

Details of similar matters having been faithfully noted and recorded, we have at last got through the shell and reached the kernel. Now for some records of interest and value. Here they are:

Dr. M., of ———, favored the association with an essay on "Sensitive Dentine," which was full of good thoughts, admirably expressed. The essay was well received, and, on motion of Dr. N., of ———, a vote of thanks was tendered the doctor. A discusions followed on various points of the essay, which was participated in by Drs. O., P., Q., and R.

Dr. S., of ———, read an essay on "Contour Fillings," which was replete with valuable suggestions, and, on motion of Dr. T., of

———, a copy was ordered to be printed for distribution among the members;—and so on *ad nauseam.*

Then Dr. U., of ———, showed some results of his skill in making handles for nerve-canal pluggers, and explained how it was done; and Dr. V., of ———, explained an ingenious method of attaching clasps to plates, which was very instructive, and pleased the members very much.

Then the lady of Dr. W., at whose house the meeting was held, surprised the members by opening the folding-doors, displaying a table loaded with all the delicacies of the season, of which the members partook with wonderful relish; after which, carriages being in waiting (thanks to the forethought and generosity of the host), the members proceeded to visit the cemetery in the outskirts of the town, and returned safe and sound, well pleased with their trip.

An evening session was held, at which resolutions of thanks to the worthy host and his amiable lady were passed; a list of essayists for the next meeting was announced—names, residences, and subjects, all faithfully reported—and at a late hour the association adjourned, all feeling convinced that the meeting had been one of profit as well as pleasure.

Now, this is what the secretary of the association thinks proper to send for publication in a journal "*devoted to the interests of the profession,*" as the report of a meeting of dentists, at which no doubt many pertinent things were said of value to all engaged in dental practice, but which are as carefully withheld in the report as the mere business routine and social incidents are minutely presented.

If all such matter were scrupulously omitted, and the reports made to convey the statements of experience, methods of treatment or manipulation, the theories, suggestions, and criticisms, offered or elicited, the record, instead of being read by those only whose names are recited, would be received with equal interest and benefit in Maine or Florida, England or America.

Messieurs secretaries, preserve the *shell* in your local archives and give the *kernel* to the profession at large. The effort to do so will benefit yourselves, gratify the editor, instruct the reader, and elevate the profession's estimate of the societies which you represent.

THE HEALTH OF THE MOUTH.

BY E. A. BOGUE, M.D., D.D.S., NEW YORK, N. Y.

A FEW suggestions as to the *preservation* of health in the teeth and gums may not be amiss, when almost all the questions that arise before the dentist involve the attempt at restoration of lost health, and these very suggestions lead naturally to considerations for the relief of

suffering not only, but to the greater permanency of that relief. No dentist likes to see the results of delicate manipulation, of care and solicitude on his part, and of pain, anxiety, and expense on the part of his patient, constantly imperiled either by the carelessness or ignorance of his patient, or the medical adviser, or his own neglect to properly instruct his patients on the points necessary to be known in order to retain good health, when it has once been obtained in the mouth.

Now, it hardly needs to be said that man is so constituted that by work the natural equipoise between waste and supply is best maintained; and it has been observed that atrophy, or undue waste or disintegration, almost invariably takes place in any organ of the body that is not allowed to do its proper amount of work. The feet that never walk are speedily unfitted for walking; the constantly uplifted arm of the dervish withers; the eye that dwells only in darkness is painful when the light of the sun is poured upon it, and the scattered teeth that go limping through thin, pulpy victuals, for fear lest anything hard should injure them, soon go their way, through the life of disuse that civilization has put upon them.

The same is true of stall-fed horses, swill-fed cows, and pet dogs: their gums become turgid with blood, soft, tender, liable to inflammation, and to absorption, and peculiarly susceptible to the influences of salivary calculus,—of which more will presently be said,—while their teeth, like those of man, become filthy, offensive because filthy, decayed, disintegrated upon their surfaces, and increasingly liable to such disintegration—painful because of it—and finally coated with a rough, calcareous deposit, which, impinging upon the gums, already prone to inflame, excites that inflammation which speedily becomes an ulceration, separating the periodental membrane from the neck of the tooth, and leaving just the additional space occupied by the ulcerative process for a fresh deposit of calcific matter, and a renewal of the ulceration, until at last the teeth are loosened nearly to their apices, the alveoli are absorbed, the whole margin of the gums are a fetid ulcer, and the teeth drop out, affording another luminous instance of a "self-limiting disease."

In man the whole of the foregoing train of symptoms is easily to be seen under the generally relaxing influences of civilization, together with the same ultimate results, unless an educated refinement steps in to supplement artificially the cleansing effect of mastication and its healthful stimulus upon the gums, as well as to repair, by mechanical means, the ravages of decay; and then, by the administration of corrective foods, which we sometimes call medicines, to guard yet more effectively against future ravages in the same direction.

It must be evident to every reflecting mind that has had opportunities for examination, that the teeth and gums were designed as comforts,

not as plagues, and were so designed as that in a normal condition they should last in health to extreme old age; yet so seldom is such an instance met with now, among the inhabitants of cities especially, that it is deemed worthy of remark when a single case is found.

Now, by returning to as near the condition of nature as is possible, such successes are attained in the preservation of health in the mouth as would utterly astonish those who had never witnessed them. The brush should be made to take the place of hard food, and should consequently be used as often as food is used. As hard food would press upon and harden the gums, and cleanse the teeth that waded through it, so should the brush press upon and give thorough friction to the gums and thorough cleansing to the teeth; not to the fronts only, but "*to all four sides and the ends;*" and as food in its soft state is most easily crowded between the teeth, and up to the margins of the gums, and in the little interstices upon the ends of the teeth, there should the brush follow, removing most perfectly every particle that is attainable; and where the brush cannot be made to go, floss silk, waxed, should be drawn, so that after each meal the mouth is rendered pure and fresh, and the gums are well exercised.

No fear need be had of permanent injury to teeth or gums from the brush alone, for the enamel of the teeth has, so far as known, never been worn or injured by it, though in a record of over 1200 cases on the writer's books, three persons have grooves in their teeth which were probably worn by using a gritty powder oftener than once a day; but in all three of those cases the grooves are just at the margins of the gums, and are probably wholly in the dentine; and even these, in all likelihood, could not have existed had the free edge of the gums covered the enamel at the time that such vigorous brushing in a straight line, and with powder, began to be indulged in. As to the gums, if they are cut or torn they will heal like the other soft parts, if in health at the time, though a little caution should be given to patients not to wound the gums by the use of the new brush, for if they do, they are not so apt to be vigorous and thorough afterward.

Acids of almost every kind have been proven to act most injuriously upon the teeth: therefore they should not be allowed in contact save in necessary cases, and then an antacid, say bicarb. soda, a half teaspoonful to a tumbler of water, should be used to brush the teeth with immediately after. If the whole system indicates an acid diathesis, fifteen grs. of the same bicarb. soda, administered daily for a week or two, will generally prove advantageous; and there is sometimes a strong indication for the administration of the hypophosphites of lime, or soda, or both, especially during pregnancies, or convalescence from severe illness, when there seems to be a systemic demand for limy material, in addition to the acid diathesis, often caused by acid foods or drinks.

If the gums be in a state of ulceration, make careful examination to discover if it proceeds from salivary calculus that is altogether beneath the gums and hidden from sight; every minute particle of it should be removed, by means of instruments slender enough to reach under the gums, yet strong enough to remove the deposit, however hard it may be; and then the cause of the ulceration being removed, the gums will get well, the teeth become firmer, and, under the proper brushing, may remain so, unless the roots of the teeth be denuded of their investing membranes so far as not to leave enough for solidity of attachment. This healing process may be promoted by injecting beneath the gums a solution of zinci chlorid., of a strength of 2 to 4 grains to the ounce of water, and also by painting them with iodine at a subsequent sitting, if necessary. One thing must, however, be borne in mind: no half-way effort to remove calculus will be rewarded by a full success,—every minute particle must be removed, or what is left only serves as a nucleus for the deposition of fresh matter, and over a foreign substance like that, the gum can never heal, although it is true a smooth bullet can sometimes become encysted in the flesh.

Lastly, it is not out of place for the dental surgeon to interest himself enough in his patients to inquire, and even direct, as to the kind and quality of foods, knowing as he does the loss of tonicity that results from excessive use of sweets, and the changed secretions resulting therefrom, as well as from the large use of acids, or the untimely use of fatty matters; we do not need the carbonaceous foods in summer, and suffer if we take them in large amounts, and then pursue our usual city life; and the teeth suffer too, as well as the general health.

Let us, then, give our assistance to the general practitioner, and by keeping the *mouth in health*, prevent the troublesome neuralgias, toothaches, and headaches, the sleepless nights, and the bad digestions and tempers that so often arise therefrom.

ON SOME UNUSUAL FORMS OF AFFECTIONS OF NERVES.

BY HARRISON ALLEN, M.D.,

PROFESSOR OF ANATOMY AND SURGERY IN THE PHILADELPHIA DENTAL COLLEGE, AND ASSISTANT SURGEON TO THE WILLS OPHTHALMIC HOSPITAL.

NEURALGIC affections of the head and face, when of extra-cranial origin, may be discussed under the following heads:

1. Those consequent upon irritation, inflammatory or otherwise, of peripheral nerves. This includes the numerous and protean dental neuralgias, periorbital pains of diseases of the eye, etc.

2. Those consequent upon injuries to nerve-trunks, either directly, as from wounds and bruises, or indirectly, as from pressure.

3. Those associated with modified nutritive processes consequent

upon variation in quality of nerve-power. This group is capable of division into two kinds, viz.: one, which is best expressed in the action of the sympathetic and motor nerves on the blood-vessel system,—vaso-motor influence; the other is witnessed in the excitation or depression of nerve-power, when apparently not acting through the blood-vessel system,—inhibitory influence.

Of the first head we have nothing to say here. In illustration of the other two we propose to submit the following cases:

Case I. *Perversion of sensibility over region supplied with infra-orbital nerve, the result of a blow on side of face and eye. Duration, three weeks.*—W. H. W., bilio-lymphatic, aged 49, seafaring man of temperate habits, while steering his vessel, Oct. 1st, 1869, received a severe blow over left side of face—obliquely downward and outward—from the handle of the rudder-wheel. The anterior chamber of eye was penetrated, the lens dislocated, and the infraorbital region severely contused. When first seen, eight days afterward, at the Wills Hospital, in addition to the symptoms of the eye-lesion, there was detected a perversion of sensibility over region of face, corresponding to the distribution of the terminal branches of infraorbital nerve. Not only was the integument from below orbit to median line of upper lip affected but the canine and incisor teeth of corresponding side, and the gum in association with them, were spoken of as participating in the same sensation. Under antiphlogistic treatment these symptoms subsided, and by the expiration of the third week had almost entirely disappeared After the first two days from date of reception of blow, little or no pain had been experienced in the eyeball. The "numbness" (as the patient expressed it) of face and teeth was persistent throughout the history of the case.

Case II. *Temporal and periorbital neuralgia, persistent perverted sensibility in ear and side of face, with paresis of facial nerve and deflection of tongue toward affected side, following contusion of eye-ball. Duration, six weeks.*—J., aged 67, of temperate habits. He is a well-built, rather muscular man, and has suffered from time to time with rheumatic pains, but no account of a frank attack of acute rheumatism elicited. On October 3d, 1869, he received a blow over left eye from a medium-sized nail, such as is in use by builders. The eyelids were closed, so that the contusion of the eyeball was received with the lid-tissues intervening. He suffered acute pain at the time, but was easier on the second day. Toward the close of the same day the pain returned and became persistent. It was marked in and about the eye, was very severe toward the nasal aspect of orbit, and extended thence outward along a line corresponding to the top of the eyebrow across the temple to a point a little behind the ear. It was not experienced on the brow, while a painful sensation, less severe than that elsewhere noticed, extended

downward along the entire side of face, being accurately confined to the affected side by the median line. The external ear was the seat of a peculiar perverted sensibility, the patient repeatedly saying that the part was frozen. The eye had been poulticed prior to coming under observation.

When seen for the first time at the Wills Ophthalmic Hospital, where the patient presented himself for treatment, twenty-one days had elapsed since date of reception of injury. He had been deprived of sleep for many nights, and his face wore an expression of suffering. The deep structures of the eye were inflamed, together with the conjunctival and periocular tissues; traumatic cataract was present. The facial expression was dull on left side. The cheek was somewhat flabby; the angle of mouth was drawn slightly downward. The tongue, when protruded, was drawn to the affected side.

All these symptoms were promptly relieved by local depletion and anodynes. They afterward returned, but with diminished severity. With the gradual subsidence of the orbital inflammation, the symptoms slowly disappeared. The coldness of ear and sensibility of face were recognizable until about the close of the seventh week.

In this instance the pain was nearly localized to periorbital area and temple. The other sensations pertained, it is thought, to disturbances of the sympathetic, acting through the vaso-motor nerves of face and external ear. The paresis of facial nerve may possibly have been a complication due to inhibitory influence. The deflection of tongue to affected side remains unexplained, unless a disturbance of the sympathetic, inducing increased muscular irritability on the affected side, may account for it. It is well to remember the history of rheumatic pains in this case.

Case III. *Asymmetry of face, hemicranial neuralgia, unilateral sweating of upper lip, and obstruction of tear-duct in an anemic woman; the presumed results of a blow received over left side of nose and face twenty years before.*

Jane McG., aged 33, single, anemic, suffering from dysmenorrhœa, occupation, housekeeper, presented herself at the Wills Ophthalmic Hospital, Nov. 1869. At the age of 13 years, she received a severe blow over region of nasal duct of left side. She has suffered from neuralgic pains since. There is asymmetry of face, the left side being the smaller. The cheek flabby, though not strikingly so. There is sweating localized to left half upper lip. The patient has noticed that both sides of face do not "sweat alike." Teeth on both sides extensively decayed. The lachrymal sac is slightly distended, discolored, and painful on pressure. The skin over sac is of a dusky-red color, the parts being subacutely inflamed. She has been troubled with more or less obstruction of duct for years.

The neuralgic pains have increased lately; they accurately define an area inclusive of the left side of head.

The patient rapidly improved in general health under a tonic and alterative treatment. The local trouble was relieved by applications of tincture of iodine externally. It was thought that the improvement in this case was in a measure due to the removal of a number of roots of teeth. The neuralgic pains were markedly alleviated by small, regulated doses of morphia and henbane.

The hemicranial pains here were probably caused by peripheral irritation, either in tear-duct, teeth, or both. The localized sweating of lip, and impaired nutrition of the side of face, were changes thought to be due to vaso-motor influence.

The history of this case is imperfect. The patient abruptly ceased attendance at the clinic.

RHINOPLASTY AND ARTIFICIAL NOSES.

BY NORMAN W. KINGSLEY,

PROF. OF DENTAL ART AND MECHANISM IN THE NEW YORK COLLEGE OF DENTISTRY.

The province of the dentist is unquestionably enlarging, and his admitted domain increasing, from year to year.

It is but a short period since the dentist (unless he were a surgeon as well as a dentist) was supposed, as his name would indicate, to confine his performances exclusively to natural or artificial teeth. Now, however, he claims for his profession the right to treat medically, surgically, or mechanically, all the diseases or deformities of the buccal cavity, and is extending his operations to and including the nasal cavity, disputing with the surgeon in the treatment of many of the deformities of those parts the superiority of surgery over that of mechanism.

The successful treatment of most fractures of the maxillæ requires the aid of a skillful dentist.

The operation of staphyloraphy has been in a great measure superseded by the perfection of mechanical appliances; and there is but little doubt that rhinoplastic operations may be rendered unnecessary in a majority of instances by a like perfection in art and mechanism.

In July last a gentleman from a distant city, a lawyer by profession, applied to me for advice. His face presented the appearance indicated in the cut, Fig. 1. An examination showed the loss, by disease, of the soft palate, a portion of the hard palate, the vomer and turbinated bones, the nasal walls of the antra, portions of the nasal and maxillary bones, and the cartilage of the nose.

A rhinoplastic operation would not be submitted to, for various reasons—among which were, the suffering and inconvenience attending it, the disfigurement caused by it, the uncertainty of the result, and the impossibility of making, by such process, a nose which should resemble to any extent the original appendage. An artificial nose being the

only alternative, a cast of the face and nasal cavity was taken in the following manner:—the nasal cavity was filled to the orifice with plaster—not in one mass, but in sections, to facilitate its removal. Before

Fig. 1

removal, however, the cast of the face was taken, the plaster coming in contact with that already in the nasal cavity at the orifice, the precaution having been taken to soap the surface to prevent the two masses from adhering. After the removal of the external mask, the sections in the nasal cavity were pushed backward, and brought out through the opening caused by the loss of the soft palate.

The sections being all brought together, a cast was made which showed the surface of all the parts adjacent to the nasal orifice, both internal and external.

Upon this plaster cast there was modeled a form of the new nose in wax, made to resemble the color of the flesh, this wax model being tried on the living face, from time to time, for criticism. The object of using flesh-colored wax for this model is, that the operator is enabled to judge better of the effect of his art than he could were the material in contrast with the surrounding parts.

It is herein that art and mechanism triumph over surgery—it being perfectly within the power of the artist by *his* means to restore this feature so that, in its individual character, it shall be in perfect harmony with the surrounding features, which it is not possible to accomplish by surgery. The extra large mass which must be cut from the forehead in a rhinoplastic operation, to provide for shrinkage, renders it impos-

sible to preserve the physiognomical relations of the nose with the face. In many cases the result is simply an uncouth appendage.

The model in wax having been determined upon as described, a duplicate must be made of such material as shall closely resemble the flesh and prove durable. Of all substances heretofore employed for this purpose, I know of none which are durable that are not decidedly objectionable in appearance. All opaque substances, no matter how beautifully they may be painted in imitation, do not look like flesh. Porcelain or enamel has an advantage in its transparency, but it reflects the light, and looks like a piece of crockery. For these reasons collodion was used in this case with remarkable success—the preparation being that now known to dentists under the name of "Rose Pearl," with some modifications in color to suit the case. With this substance a nose was made, which had the color, tone, and translucency of flesh, giving also the delicate little tracery of veins which are so often observable in the nose toward the tip. This substance possesses also the qualities of elasticity, strength, and durability; is not easily broken; nor at all affected by exposure to the elements or thermal changes.

The wax model, after being completed externally, was scooped out inside, so as to leave a mere shell of not more than a line in thickness. The collodion duplicate was produced by making a die of fusible metal, pressing the mass into shape, and curing it in substantially the same manner in which "Rose Pearl" base is worked. To Dr. Franklin, of this city, am I indebted for assistance in working this material.

Fig. 2.

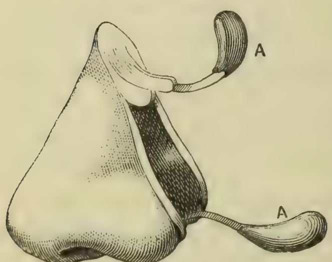


Fig. 2 gives a view of the nose complete, with the attachments for securing it in place.

A, A, are pads made of vulcanite, adapted to depressions in the nasal cavity, and connected with the nose by flat gold springs. The gentle pressure of these springs is sufficient to keep the nose firm in its place; at the same time their elasticity will permit its removal at pleasure.

The border of the nose is brought to a thin, beveled edge, wherever it comes in contact with the cheek, and the adaptation is so accurate that at a short distance no mark of separation is visible. In many cases of the application of an artificial nose heretofore, the attachment has been so insecure as to require the patient to wear a pair of spectacles to keep it from moving. Some artificial teeth and a palate, which were also required in this case, were made independent of the nose, and it is always desirable that they be disconnected. The movement of the muscles of the face is such that the nose should be permitted to yield

with them. Besides, a nose attached to a plate of teeth through an opening in the roof of the mouth must necessarily show all the movements of mastication.

Fig. 3.

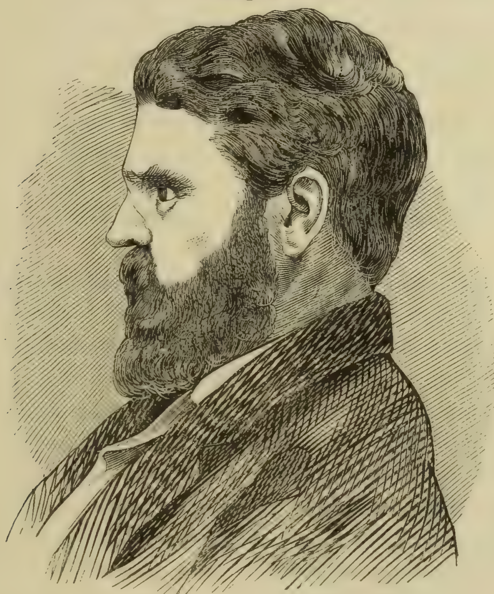


Fig. 3 represents the patient with the nose attached.

The success in this case may be inferred from the following extract from a letter received from the patient soon after his return home:

"Every one here is delighted with my improvement; it gives me, I am glad to say, no discomfort, and I feel no weight. Many of my most intimate friends, after being in company with me several hours, both indoors and in full light of the sun, believed it genuine flesh, so deceptive is it. Several medical gentlemen who have seen me have said that, in all similar cases to mine, they should never again advise an operation when so neat a thing can be made."

SEPARATING TEETH.

BY W. C. HORNE, D.D.S., NEW YORK, N. Y.

Several cases in recent office practice lead me to submit some observations on separating teeth.

The degree of separation, and the means to be employed to this end, are subjects of discussion among practitioners, on which such difference of opinion exists as to call forth, at times, great warmth of expression. Approximal cavities in the incisor teeth require a considerable amount of space for their successful preparation and filling. Rarely the posi-

tion of the cavity is so fortunate as to permit access to it without any more separation than would admit a No. 1 file; but, where this is not the case, room must be obtained. The two methods of wedging, by which this is effected, are distinguished as relatively slow and quick; and I need hardly say that each has its extreme advocates, while each has also its indiscreet practitioners. The manner of quick wedging, described and illustrated by Dr. C. Palmer, is the most systematic and apparently the least distressing presentation of that process which has come to my knowledge. Let those who wedge quickly take all the pains and precautions which he sets forth, and there would be an end to the experiences of teeth permanently separated, crowns broken off, and such like malpractices.

That the separation of the teeth should be effected with great care and judgment all will admit, and yet no one will be inclined to acknowledge a lack of those qualities in himself or his practice. Thus, I have heard a member of the profession reiterate, time and again, his great confidence in "the *judicious* use of the file;" and yet, strange to say, scarce a mouth to which his files had been applied but bore unmistakable evidence of its reckless use, in the abundant presence of approximal cavities of the most difficult character, consequent upon the entire removal of the enamel. So, too, of another, who condemns in unmeasured terms the driving of wedges with mallet force, and, believing implicitly in slow wedging, separates his patients' teeth with rubber, and that in pretty thick pieces. From such practice I take as a warning case one which has just passed under my notice. Here one central and two lateral incisors, with two bicuspids, were found dead with fistulous ulcers. Each of these teeth contained one or more approximal fillings; but, upon examination, in no case did the cavity thus filled reach to the pulp chamber. That the death of the pulp was not due to the application of any obtunding agent was ascertained, and the true cause fixed by the patient's statements. The teeth were wedged apart with rubber, causing very great soreness, during the continuance of which the cavities were excavated and filled; subsequent pain and soreness was so common that it came to be considered inseparably consequent to operations on the teeth. Occasionally some of the ill results of "heroic" quick wedging present themselves. In one instance I have seen the central incisors permanently separated, involving a fracture of the alveolar ridge. But the commonest symptom in these cases which comes to my knowledge, is that the patient becomes disgusted with this treatment, and leaves the dentist with feelings almost vindictive.

Having thus noticed the evils of excesses in these various methods, I desire to put in a plea for moderation. I consider rubber one of the most dangerous substances used for separating teeth, and would eschew

it almost totally; when used, it should be in the very thinnest form. In wedging with rubber, its resilience is exerted immediately, and kept up until the teeth have moved to the extent of the ordinary thickness of the wedge. This great force, suddenly applied, excites an inflammation which is capable of involving the dental pulp itself; and especially is this to be expected in young subjects. Examples of this kind are very numerous.

I prefer to separate teeth slowly, but above all things I want no great soreness to be created; if there were no alternative but rubber or the quick wedge, I should prefer the latter. But there is a medium course; by wedging with cotton, the teeth can be moved very much, with but little inconvenience. If there is not space enough to get cotton between the teeth, even at the necks, the thinnest shaving of rubber may be used; but this is the limit of its use. If there is any soreness at all in the tooth to be filled, or the approximate one, I drive a wedge between, just enough to keep each tooth firm during the operation of filling, which affords great relief to the patient.

The file has fallen into disuse for making separations, owing to the general conviction that it does more harm than good. The chisel has largely superseded the file for opening approximal cavities, confining the use of the latter to trimming cut surfaces; and this mode of operating leaves the teeth in much better shape than when, by repeated filings, they are left of all forms, and consequently in all positions but the right one.

I deem it a primary consideration to save the patient all pain which I can, without sacrificing thoroughness. It is for this reason that I resort to the slower operation in wedging; and for the same reason I prefer a temporary stopping of some preparation of rubber, to the immediate preparation of a very sensitive cavity for a gold filing.

WHERE SHALL I LOCATE?

BY J. S. LATIMER, D.D.S., NEW YORK, N.Y.

For some years past I have been persuaded that the tendency to flock to large cities is a great and growing evil, affecting people of all classes and vocations. Mr. Greeley has many times written upon this subject, and it is to be hoped that his friendly advice has been accepted by some who otherwise would have gravitated to the cesspools of vice and crime. But it is not to people in general that I propose to speak—only to dentists, and especially to those of towns and villages.

It is true that the dental schools are located in the large cities, and necessarily so, as only there can a sufficient number of suitably qualified teachers be organized into a faculty; and it is also true that the ad-

vantages of weekly or fortnightly meetings of dental associations are to be found in dense populations. Undoubtedly the cities in which our dental colleges are located afford educational advantages far superior to those offered by towns and villages; hence a pupilage with a first-rate city practitioner (not a fossil), and a course of instruction in one of the dental schools, is greatly to be desired.

It must not be supposed, however, that all the dentists of cities are the better qualified for the educational advantages within their reach; for, of the two hundred resident in the cities of New York and Brooklyn, not one-fourth part attend any of the meetings of the five dental societies whose doors are open at their sessions. As for the dental journals—those indispensable helps to those who would progress in dentistry—they are quite as accessible and as liable to be read by the rural dentist as by his city brother, for the people of cities have many things to divide their attention, and have really less time to spare and less inclination to study than have their country friends. When a man dependent on his own labor has to pay from one to three thousand dollars for the rent of his domicile, and to meet other expenses amounting to twice as much more, it is hardly supposable that he will be quite free from care, or that he will have much time to devote to study and scientific investigation. If we add to this, that the confinement to the dental office and to incessant and unhealthy toil make nine-tenths of our city practitioners dyspeptics, by which they are unfitted for study, we have a counterbalancing advantage in favor of the country dentist, who has his dog and gun, a garden, a grapery, and a saddle-horse to take him much out of doors, thus keeping him in health, and so better fitted for vigorous mental labor and study during the hours unoccupied by professional duties.

It is true that in cities some dentists get large fees; and many an air-castle has been founded on the fact that Dunning gets from fifteen to twenty dollars for small fillings, and that Atkinson thinks nothing of charging a hundred dollars for an operation. All the shadowy structure vanishes before the facts, however. One may count upon his fingers all who have obtained competencies by dentistry alone in the cities of New York and Brooklyn, while the great mass of the remainder struggle against increasing expenses—paying their earnings to landlords, and finally die houseless, with little more than enough to bury them decently.

To some this picture may seem overwrought, but, if personalities were allowable, I could refer to cases enough to fully confirm it.

In a town, where property is cheaper, almost any dentist may own his home, but in a great city like New York, a house in a locality suitable for one aspiring to a first-class practice is worth from twenty-five to fifty thousand dollars, and it is questionable whether he who has the means to purchase such a house would not be wise to retire to the country and live on his money.

A dentist in full practice remarked to me last summer that he had not had his usual vacation, and he feared he should miss getting it. He once thought a full practice very desirable, but he had found that it meant simply all work and no respite.

Many are attracted to the cities by the supposition that only there can they obtain remunerative prices for first-class operations ; and this certainly seems a plausible reason for migrating ; but let us examine it a little. In the first place, several years will elapse before the moneyed people will find their way to your office. Secondly, you get in food, raiment, and shelter all the necessities and many of the luxuries of life —an equivalent for your services in the country quite equal to what you would be likely to get in a city. For instance, in a small place a good residence can be had for three or four hundred dollars a year, while the rent of a correspondingly good one in the city of New York would be eight or ten times as much ; so it happens that the twenty dollar and the one hundred dollar fees are absorbed by the every-day expenses incident to a city life, and the income-tax list shows that the recipients of large fees are not necessarily saving more money than they would be likely to save in a country town, with smaller fees and more moderate expenses.

I have been moved to write upon this subject by the repeated failures and disappointments that have come to my knowledge. I could name gentlemen who have been led to forsake the little town or village practice and try their fortunes in the great metropolis ; some of whom, after exhausting the savings of former years, have returned disheartened to the vicinity of their former homes, while others continue the struggle with little hope of realizing the bright vision which allured them hither.

If any object that the foregoing is singular advocacy from a city dentist who migrated from the country, I reply that my evidence is worth all the more on that account, and that the wisdom of my suggestions is confirmed by my own experience.

HEREDITARY TRANSMISSION OF DENTAL IRREGULARITIES.

BY J. H. M'QUILLEN, M.D., D.D.S.,

PROFESSOR OF PHYSIOLOGY IN PHILADELPHIA DENTAL COLLEGE.

THE transmission from parents to their offspring of normal and abnormal characteristics in the reappearance, generation after generation, of the same features, color of the hair, tones of the voice, movements of the body, etc., and of such diseases as phthisis, scrofula and gout, is a subject of general recognition This tendency to the reproduction of individual peculiarities in the descendants of a human being is in no portion of the organism made more markedly manifest than in the structure, size, form, and relative position of the teeth. Particularly

is this the case in the reappearance of irregularities of the teeth, in which, with almost photographic exactness, the same tooth or teeth occupying a malposition in the mouth of a parent are frequently reproduced in the children and grandchildren. In illustration of this, I propose to present a series of carefully recorded cases which have come under my own observation, and then to inquire into the *causes* producing and the *law* controlling such phenomena.

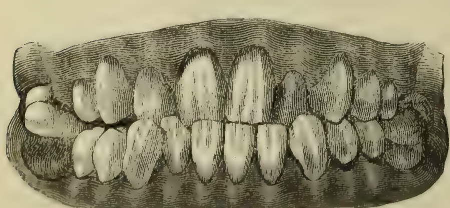
As a case in point, the father of a family of four children, a daughter and three boys, has the two superior lateral incisors standing slightly within the superior dental arch, so that in the occlusion of upper and lower teeth, when the jaws are closed, the right inferior canine strikes outside of the superior lateral incisor and canine.

Although the irregularity was not so decided as to attract general attention, he called upon a dentist when a lad, sixteen years of age, to consult him relative to its correction, but was assured that it would be a waste of time to make the attempt; several years later, after reaching manhood, an unsuccessful effort was made.

Of the children of this gentleman, the daughter, aged sixteen, up to a few months ago had the superior lateral incisors standing very far within the arch, the right superior incisor also deviating slightly. Owing to a fall when four years of age, in which the upper jaw of the right side was slightly injured by striking against the edge of a table, and no doubt making a serious impression upon the follicle of the right superior canine, that tooth has failed to make its appearance. In the lower jaw the right lateral incisor stood so far within the arch as to press upon the tongue and interfere with distinct articulation, and the central incisor and canine were quite close to each other, almost concealing the lateral from view.

On bringing the upper and lower teeth together, the right superior central incisor closed *inside* of the inferior central and *in front* of the inferior lateral, while the superior lateral was back of the inferior canine, and the left superior lateral inside of the inferior one, producing an articulation as shown in the accompanying illustration, Fig. 1.

Fig. 1.

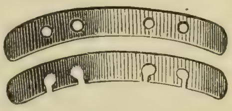


The irregularity in this case was so marked as to attract general attention, and the occlusion of the teeth, had it not been corrected, would have eventuated in a permanent and unsightly prominence of the lower jaw most destructive to the harmony of the features. In the course of two months, with a very simple, easily constructed appliance, which

could be readily adapted by the patient, the defective position of all the teeth was corrected, and a result obtained most gratifying to the patient; completely changing the appearance of the mouth, and greatly improving the expression of the face.

The fixture employed consisted of a silver bar of the thickness of ordinary lower plate for artificial dentures, two inches in length by a quarter of an inch in width, perforated by four holes, and then, with a thin, flat file, cuts were made from the edge of the bar to these holes, making a fixture similar to the lower figure in the accompanying illustration, Fig. 2. India-rubber rings, cut from French tubing, were readily passed over the bar (which rested on the front surface of the superior incisors) and around the deflected teeth. The constant, gradual contraction of the rubber drew the lateral incisors into their proper places in the arch. A bar of similar construction was also used in the lower jaw. After becoming familiar with the necessary manipulation, the application of the fixture was made entirely by the patient, thus relieving the operator of considerable trouble. The propriety of employing a fixture of this kind in such cases was originally suggested by me in the November number of the Dental Cosmos for 1859.

Fig. 2.



In the eldest boy of this family, aged fourteen, the superior lateral incisors deviate from the regular line of the upper arch, but not sufficient to excite comment, or close inside of the lower teeth.

The second boy, aged eleven, has the superior lateral incisors so far within the arch as to be half hid by the adjoining centrals. In the occlusion of the upper and lower teeth the superior laterals of course strike inside of the inferior ones.

In the third boy, aged seven years, the permanent central incisors have erupted, while the laterals have not yet made their appearance. The indications are, however, that there will be a repetition, in some degree, of the prevailing type in the other cases.

(To be continued.)

DIFFICULTIES IN THE USE OF PLASTER OF PARIS.

BY JAMES W. WHITE, PHILADELPHIA, PA.

Complaints are frequently made of unsatisfactory results in the manipulation of plaster of Paris, many of which are doubtless due to a failure to observe some necessary precautions.

Plaster should always be kept in a dry place—never in a cellar—and in winter time in a warm room. It will not work satisfactorily if cold, nor if mixed with cold water. Premising that the article is good, the observance of the following directions should insure success:

Put the required quantity of *tepid* water into the mixing vessel, and add the plaster gradually (*stirring constantly*), until the proper consistency is obtained. If too thin, it will not set as quickly. If for taking impressions, it should be quite thick, and the addition of a *small pinch* of salt will facilitate the setting, but the cast will not be quite as hard.

A PLEA FOR CHILDREN.

BY JAMES M'MANUS, D.D S., HARTFORD, CONN.

Among the patrons who have desired my advice and services during the past three months, are six young patients who are similarly troubled as to the condition of their superior incisors. Four of these have each two superior centrals with dead pulps,—and there has been, as stated by the patients, an abscess, and discharge of pus, from over each tooth for several years past. The remaining two have each a superior lateral incisor with dead pulp, but as yet no abscess. Each and all of these teeth were more or less discolored. The oldest of these patients I believe to be under twenty-three; the youngest is not yet twelve years old. On inquiry, I learned that the majority of these teeth were operated on before the twelfth, and the remainder previous to the fourteenth year. In every case they report them to have been extremely sensitive to thermal changes and to the touch after they were filled. Two of the cavities had been filled with amalgam—the others with gold; not one of them were larger than average approximal cavities. They state that when done they were almost murdered, and that they actually hated the dentist. From the appearance of the teeth and the statement of the patients, I could arrive at no other conclusion than that the teeth had been roughly handled by the dentist; and when we take into consideration how much intense pain and annoyance many must endure before they even get partial relief by the establishment of an alveolar abscess, it is not so much a matter of surprise that young patients hate even the sight of a dentist, and shrink with dread at the thought of an operation.

These cases, and the remembrance of many similar, seen during my practice, have impelled me to offer a few suggestions to the readers of the Dental Cosmos as to the kind of operations indicated, and best calculated to preserve the incisor teeth of little patients that are obliged to have them operated on previous to the fourteenth year. Very few patients of mature years can place themselves under the care of the dentist without drawing heavily on their stock of courage, both moral and physical; and is it not expecting and demanding too much of mere children that they should endure long, tedious, and painful operations at an age when their natures rebel at every restraint that is cast about

them? It is true there are exceptions in the experience of every practitioner, where children shame their elders by the patience and endurance they exhibit while having operations performed; and yet I have known instances where children have shown "Spartan-like heroism" during one operation who could neither be coaxed nor driven to visit a dentist again for years. Very many skillful manipulators seem to forget that children require the same care and attention that is demanded by older patrons; that a pleasant conversational manner will be quite as keenly appreciated by them, and do as much toward gaining their confidence and esteem, as a like course does with those of mature years. They too often forget that greater care and delicacy of manipulation are required when operating on the teeth of young children; and in their efforts to make first class operations they attempt to do too much. Within the year I finished the twentieth gold filling for a young patient. At twelve years of age she was brought to a very superior operator; with as little delay as possible he commenced operations on the superior left central and lateral incisors, made a separation, and partially prepared one cavity for a filling, when the child rebelled, got out of the chair, and despite her friends, left the office, and for four years all efforts of kind friends and wishes of parents could not prevail on her to allow any one to operate on those teeth again. As she grew older, and began to realize how badly her teeth appeared, she summoned courage to make another attempt, and after a number of sittings I succeeded in putting her teeth into passable condition. I found four of the molars decayed away, leaving only the roots in a straggling condition, the superior left lateral incisor with dead pulp, large contour fillings required in the central and lateral, and in the remaining teeth fillings above twenty. In my opinion the greater part of this might have been averted, had the operator first consulted been a little more considerate and judicious in his treatment of the child at the first sitting. The children who require operations previous to the fourteenth year are almost invariably of a frail and delicate organization, with oral secretions of a viscid and acrid character, rendering the teeth and gums extremely sensitive. For these patients it is not advisable to exert much force, either in separating the incisor teeth or in impacting a filling. The use of rubber, or any article to be left for a time between the teeth, in my opinion, is not good practice. There are a few cases where quick wedging may be proper if the wedge is carefully introduced, although extreme caution is necessary in driving a wedge between the superior centrals. In many cases it may be better to separate with a very thin, fine-cut file. With delicate, sharp, and properly-shaped instruments, we can, in the majority of cases, with but a slight separation, prepare cavities in these teeth, and introduce good fillings, using either S. S. White's prepared "gutta-percha," or Hill's stopping. Fillings of this class are preferable to any other, for several

reasons:—they make a perfect filling; they can be introduced with slight pressure, causing little if any suffering; there is complete freedom from annoyance after the operation, on account of the non-conducting properties of the material; but little time, comparatively, is required to complete the operation; and, as circumstances demand, they can be easily repaired or removed, when it is safe to put in permanent fillings. The dentist should have the same consideration for children that others have, and not expect to find "old heads on young shoulders." They should not be asked to remain long in the chair; one, or at the most, two operations are all that should be attempted at a sitting.

By pursuing this course you will not overtax the endurance of your patients, and you will have the satisfaction of seeing them return, with less manifestation of dread for future operations.

THE LAWS OF MECHANICS IN THEIR RELATIONS TO FILLING TEETH.

BY E. BLAKE, BOSTON, MASS.

Among the sciences having relation to and modifying the operation of filling teeth, are anatomy, physiology, chemistry, and mechanics. Its mechanical aspect has not been so often or so fully presented as its importance demands. The laws of mechanics are as imperious as any others, and dental operations, though harmonizing with all others, if violating these, are useless. There is great power in the muscles of prehension, retraction, and occlusion. The form of the filling, its position, and the inclination of its presented surface or surfaces to the antagonizing tooth, are often decisive of its fate. It may be "a thing of beauty" and *not* "a joy forever."

In making a filling, therefore, an essential thing to be considered is the amount and direction of the force that will be brought to bear upon it. In a simple cavity, indeed—in the grinding surface of a bicuspid or molar—no thought need be given to it, for all force must be in the direction of permanence. But the case is greatly altered when a compound or contour filling is to be made in any of these teeth. Here it will often happen that the external contour line of gold, rising above the centre of the tooth and sloping toward it, will present a surface to the antagonizing tooth in such a manner that the relative strength of the facial muscles and the attachments of the filling will be fully tested. To enable the filling to resist the action of these muscles without yielding, two things are essential: In the first place, the wall of the cavity next the gum, in one part at least, should present an inclined plane depressed toward the centre of the root. And secondly, near the grinding surface, as nearly opposite each other as possible, two undercuts into the

dentine should be made. With the cavity thus formed, a well-impacted filling will support any ordinary pressure, either outwardly or toward the root. But if this form cannot be attained in some good degree, then the perfect contour form of the filling should be departed from sufficiently to prevent dangerous pressure from the antagonizing tooth, or to change its direction, if possible, toward the centre.

It has been urged that contour fillings should *always* be made—that any departure from the models of nature is unworthy the present status of our art. To this it may be replied, that the dentine of a tooth is anatomically organized of homogeneous materials in chemical union, while a filling is made of dissimilar material, and retained in place by mechanical adjustment alone. The difference in their capacity to resist force is therefore very great. And since we cannot follow Nature's methods, it is not always safe to adopt her forms. When we do so in violation of the laws of mechanics, the loss of the filling is the sure consequence.

Many teeth, so much decayed that their walls would be shattered by consolidating the gold directly upon them, may still be filled and preserved. Diffusion of force lessens intensity. A force just sufficient to drive a rifle-ball through a board, if applied to a projectile six inches in diameter, would scarcely indent the board at all. And by first protecting the frail walls with a coil of soft foil, or layer of os dentine (which latter for obvious reasons must not come to the surface), so as to diffuse the force of the blow over a larger space, malleting may afterward be employed with safety.

But space fails me, nor is it necessary to describe every variety of case into which mechanical conditions enter and form part of the diagnosis. These few illustrations serve to indicate the principles which are to guide us in their treatment.

The mallet and automatic plugger give great advantages to the dentist in ease of operating and perfection of work. Their impacting power is much greater than hand-pressure, because this is simple force, or weight, while they have a striking force, which is the product of the weight into the square of the velocity. Still, the direction of force by hand-pressure may be universal, while, with these instruments, it must be in a line with the shaft, or parallel with it. The blow upon the gold is *always* in the same direction as that upon the shaft, no matter what curves this may have in it, or at what angle to it may be the serrated face of the point. These curves simply facilitate the introduction of the instrument into the cavity, and the face of the point should always be at right angles with the shaft; for if it is not, it cannot strike the gold perpendicularly to its face and give the firm impaction which it should, but must strike it obliquely, and make a ragged, scratching im-

pression upon it. The serrated point of the shaft of the instrument moves at the same instant and in the same direction as the end to which the force is applied, and any impaction of the gold in any other direction must be the result of hand-pressure after the force of the blow is exhausted.

It has been claimed that, by some sleight-of-hand movement, at the moment the blow is struck, the direction of force in its passage to the point can be changed. The feat of *shooting round a hill*, and killing game on the other side, has always been considered apocryphal. Yet the former, though it has sometimes been advanced by men of reputed science, is no less impossible than the latter, and should be considered equally without the pale of scientific discussion.

APPROXIMAL CAVITIES.

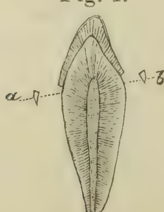
BY GEORGE S. ALLAN, D.D.S., NEW YORK., N. Y.

THERE has been of late a rapid advance in all that pertains to operative dentistry, mainly due to a more skillful manipulation of foil, with better instruments.

Without questioning the value of skill, let me draw the attention of the profession to a point of *structure* apt to be overlooked, and yet oftentimes all-important to be remembered to insure success.

Some years ago, in making sections of teeth for microscopic examination, I found that the preservation of the enamel intact was very difficult. It would chip and break, and almost always in one place, viz., where it tapered off at the neck of the tooth. It seemed to be more brittle there, or its adhesion to the dentine less strong. I had to be very careful to obtain perfect specimens. Figure 1 shows one of the failures taken from my cabinet.

Fig. 1.



Longitudinal sec. sup. incisor. Showing enamel edges *a* and *b* scaled off in preparing for microscopic examination.

Fig. 2.

Side view superior bicuspid. Showing cavity and inferior dangerous enamel edge, *a*.

Fig. 3.

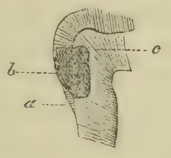
Side view superior bicuspid with approximal cavity extending below enamel. *a* and *b* at sides weak spots.

The broken-off pieces will be seen to the right and left. Now, notice, you have here a thin layer of enamel, and that the enamel fibres or

crystals are nearly perpendicular to the surface of the dentine, and remember that these fibres or crystals are 99 per cent. mineral, and are therefore, though hard, extremely brittle.

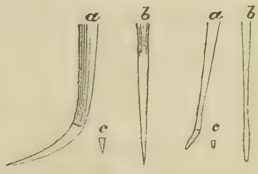
If you take two sheets of glass of same quality, but differing in thickness, and place them on a plane surface, tapping them gently with a hammer, you will find that the thickest glass will stand the hardest raps without breaking or even crumbling Now, the enamel is like glass in substance, but less capable of resisting pressure, because it is not homogeneous.

Fig. 4.



Longitudinal section through prepared cavity, approximal surface. Superior bicuspid. X 2 diam.
a, weak enamel edge.
b, cavity.
c, dentine.

Fig. 5.



Sickle-shaped instruments for testing and trimming inferior margins approximal cavities.
a, side view.
b, front view.
c, as seen in section through dotted line.

So long as it is intact, each fibre supports and is supported by its neighbors; but remove by decay or mechanical means a portion, and those on the edge of the vacant space will give way far more readily. They will break toward the cavity; each fibre will, in a measure, have to depend on its own strength, having, in addition, only the support of its adhesion to its neighbors in the rear.

Let us see the condition of affairs in some approximal cavities. Take the bicuspids. See Figs. 2, 3, and 4.

Fig. 2 is a front view, where the cavity extends nearly to enamel line. Fig. 4, side view of same cavity, as it would be seen in a section through centre × 2 diameters. Here the lower margin of the cavity is at the neck of the tooth, where the enamel is thin and frail and liable to scale off from the body of the tooth. In Fig. 5, the cavity extends below the enamel line, and we have two dangerous points to guard against, *a* and *b*, at sides of cavity, lower portion.

We all know the difficulty of reaching the lower inferior margin of approximal cavities, and we too well know the large proportion of failures they invite. Is it not likely that one cause, at least, of these failures is due to the unstable inferior walls of such cavities, and to the rough and uncertain manipulation consequent on the difficulty of reaching and seeing where we put our instruments and how we use them? Does not that portion of the cavity which requires the most delicate and skillful handling receive the roughest and most unskillful?

For some months past I have been using Barnum's "rubber dam,"

and no child with a new toy has enjoyed his good fortune more than I have its use.

In the *white*, dry cavities I thus obtained I first practically noticed the point I have attempted to illustrate, and freed from the care of being drowned out, have studied the difficulty, and planned and tested its treatment.

On looking into such a cavity thus prepared, the line of unison between the enamel and dentine can be plainly seen, and with a magnifying glass, two or three inches focus, the condition of the enamel edge made manifest.

It will often be found rough and uneven, and if tested with a properly-shaped instrument, crumbly or ready to scale off. Of course, there is a great difference in individual cases. In some, where the line of demarkation between healthy and diseased tooth substance is sharp, it will be found in the prepared cavity with even edge and strongly adherent; but in many cases the reverse.

The treatment is, of course, a matter of skill and judgment with the dentist. With fine sickle-shaped instruments, as shown in Fig. 4, the condition of the margin may be made out, and more or less removed, as thought advisable.

In all cases, as little rough pressure by plugger or burnisher should be employed as possible.

Finish off with fine files and polishing-powder, and be *sure* not to leave an overlapping edge of gold.

PROCEEDINGS OF DENTAL SOCIETIES.

AMERICAN DENTAL CONVENTION—FIFTEENTH ANNUAL MEETING.

THIS Association, organized in August, 1855, held its fifteenth annual meeting at Tyler's Hall, New Haven, Conn., on Thursday, Oct. 21st, 1869, the President, Dr. J. M. Crowell, of Brooklyn, N. Y., in the chair.

The Secretary being absent, Dr. Samuel Mallett, of New Haven, was appointed Secretary *pro tem.*

The following gentlemen were elected officers:

President, Dr. J. G. Ambler; Vice-President, Dr. Samuel Mallett; Recording Secretary and Treasurer, Dr. J. H. Smith; Corresponding Secretary, Dr. J. S. Latimer.

The retiring president made a short address, urging upon the members

of the profession endeavors to discontinue the use of vulcanized dental plates, which he considers are injurious to the health. He had of late been examining the merits of the porcelain base, and was pleased with the improvements made in that style of work; believed that the cheapness and ease with which rubber was made had a tendency to discourage the better class of dentists, but that he hoped, now that rubber was believed to be injurious as a base for artificial dentures, the more skillful would set a higher standard in the mechanical department, in which there has been a falling off, while in the operative department great progress has been made.

The incoming president, Dr. J. G. Ambler, on taking the chair, indorsed the remarks which had just been made, and stated that instances were numerous in his practice where vulcanized rubber plates had proved injurious to the health of the wearers; considered gold and platina far preferable in every respect; thought we ought to perfect instead of cheapen artificial dentures.

Dr. Ambler gave pleasant reminiscences of the Convention, from its organization to the present time, showing the good which it had accomplished in bringing the profession up to a higher standard. He claimed that it was entitled to recognition as a public benefaction; referred at some length to the efforts of many to ignore its claims, and to consider its mission accomplished, and urged with much force the necessity for its continuance, claiming that a society *additional* was not necessarily a society *oppositional.* While other organizations are accomplishing much in their *limited sphere*, this Convention, claiming the boundless universe as its field, is doing much, and in the future hopes to do more, to raise the standard of professional excellence, and bring very many up to that standard who could be influenced through no other organization.

Dr. Preterre, of New York, was opposed to the use of rubber; considered collodion far better for cheap work; exhibited a number of specimens of collodion and Rose Pearl. For durability and nice work he considered gold plate, or Allen's continuous gum on platina, as the best that could be used.

Dr. Mallett said he had often met with the same difficulties that the preceding gentlemen had with rubber; considered that it had been a curse to the profession. The cheapness of the work, and the ease with which it was made, had brought a class of people into our ranks that were not worthy of the name of dentist, by whom thousands of teeth have been extracted which might otherwise have been saved. Nevertheless, rubber has been a boon to many who could not afford a gold plate, and its utility hinges upon the question whether or not it is a proper article to put in the mouth. He preferred gold plate.

Dr. J. H. Smith said that in his practice, for full sets, he preferred the continuous gum on platina plate; had discarded rubber entirely. For partial pieces he used gold or iridium; had in some instances made full sets of iridium plate, baking the Allen siliceous compound the same as upon platina plate. It made a much stiffer plate, and required a little more care in striking up than it did for platina, being less yielding. But where strength was desirable he preferred it. He had been very successful in the continuous gum work, having had far less breakages than when he used rubber; and as a general thing these had occurred from letting plates fall while washing them over a marble or china bowl; thinks it the strongest work made while it is in the mouth. The *weight* is often made an objection to the continuous gum by dentists who are in the habit of using rubber, but this had never troubled him where a good fit is obtained; had less trouble in getting a good fitting plate than he used to have with rubber. Had made the continuous gum for patients who had been wearing rubber, and heard them say: "They fit better and feel lighter than my rubber set did." Properly made, he believed continuous gum, on platina or iridium plate, to be the best material for artificial dentures in use.

After a lively discussion of this and various other subjects, the president announced the following Executive Committee for the ensuing year:

Drs. W. B Hurd, of Brooklyn, N. Y.; B. T. Whitney, of Buffalo, N. Y.; I. J. Wetherbee, of Boston, Mass.; L. S. Straw, of Newburg; John Allen, New York, N. Y.

After which the Convention adjourned to meet in New York, September, 1870. J. H. Smith, *Rec. Secretary.*

SUSQUEHANNA DENTAL ASSOCIATION.

A stated meeting of this Association was held in Wilkesbarre, Pa., Nov. 12th, 1869, the President, Dr. C. S. Beck, in the chair. Fourteen dental practitioners were present.

After preliminary business, the time was occupied until noon in asking and answering questions by the members, as follows:

"What is to be done when a brooch or nerve extractor becomes broken off in the nerve cavity?"

Some have filled over the broken piece successfully; others failed disastrously in every attempt to remove or fill, and could only resort to extraction. Success had, however, been met with in removing the broken piece, by inserting a new one wrapped with a little lint or cotton,

which being wound into the broken part usually brought it out without trouble.

Several have had happy results in treating sensitive dentine with chloride of zinc, and also in capping an exposed nerve by first touching it with creasote to obtund its sensibility; then covering with os-artificiel, and completing the filling with gold.

Dr. J. L. Fordham favored the Association with an essay on filling teeth, urging thorough work. He commended Barnum's rubber dam as invaluable; peculiarly serviceable in making contour fillings; would hardly know how to get on without it.

Dr. Gerhart thinks contour fillings generally inefficient and unsatisfactory, and when in front teeth, usually unsightly and repulsive.

Dr. Williams favors such fillings, and is usually successful. He drills from one to four holes for anchorage and retaining points, and uses rubber and hickory wedges to separate.

Dr. Beck thinks one natural tooth saved worth a dozen artificial ones; thinks there is too much of a disposition to hurry in filling. To make a thorough filling, takes time and care.

Dr. Hill smooths and polishes the opening to cavities—avoids sharp angles—packs his gold solid, and has no after-trouble.

In the evening Dr. Gerhart gave a public address before the Association, in the court-house. Subject: "The Human Teeth, their Uses and Abuses." It was an able address. It will be published.

The second day the subject of "Dental Associations" was taken up.

Dr. Barrett opened with a short account of the origin and progress of our own Association, and was followed by others, who commended dental associations, not only as a means of adding to actual knowledge, but also as tending to elevate the profession at large.

The members generally expressed themselves in favor of legislative action to regulate dentistry in this Commonwealth, and the following resolution, offered by Dr. A. M. Hill, was unanimously adopted, viz.:

Resolved, That this Association reaffirm their former resolution in regard to seeking legislative action to regulate the practice of dentistry in this Commonwealth, believing such action would protect and elevate the profession; and that we, as an Association, are strongly in favor of such a bill as the State Dental Society, in their wisdom, may present for the action of our Legislature.

J. L. Fordham, D.D.S., was appointed to deliver the public address at the session of May, 1870, and Drs. J. E. Valentine, James Locke, and J. M. Barrett were appointed essayists for the same meeting.

The subject for debate is, "Capping Exposed Nerves, its Feasibility, and the Means of Obtaining the Best Results."

Adjourned, to meet May 13th, 1870, at Williamsport, Pa.

J. M. Barrett, *Secretary*.

CHICAGO DENTAL SOCIETY.

CHICAGO, ILL., *December* 9, 1869.

EDITOR DENTAL COSMOS:

DEAR SIR,—In my report of the October meeting of the Chicago Dental Society (see November number of the DENTAL COSMOS, 1869), I made an important omission which I desire to amend.

In Dr. Dean's remarks, after the words "upon examination, he found the pulp still alive," should be inserted—"*and new bone formed over it.*"* In the subsequent operation upon this tooth, preparatory to inserting pivot tooth, he found, after sawing off the crown, a new deposit of bone over the pulp, the thickness of "a separating file," which he had to drill through before he reached the pulp cavity. The only member who availed himself of his invitation was Dr. I. N. Crouse, who corroborates this statement.

Please be kind enough to make the necessary correction in the next number of the DENTAL COSMOS.

Very respectfully,

CHARLES R. E. KOCH.

AMERICAN DENTAL ASSOCIATION.

TO THE MEMBERS OF THE AMERICAN DENTAL ASSOCIATION:

Section 5 of Article III., of the new Constitution of the American Dental Association, adopted at its last session, is as follows:

"Permanent members shall consist of those who, having served one year as delegates, and complied with the requirements of the Association, shall signify to the Treasurer a desire for permanent membership."

I therefore request all members to "signify their desire" at once whether they wish to be considered permanent members, and remit their annual dues, five dollars, to me, that I may adjust my books accordingly.

WM. H. GODDARD, *Treasurer*,

Cor. Fourth and Green Sts., Louisville, Ky.

* The doctor evidently meant *dentine* or *osteo-dentine*, as it is difficult to conceive how *bone* could be found in such a place. J. H. McQ.

EDITORIAL.

SALUTATORY.

A New Year and a new volume recalls the fact that ten rapid years have passed since the Dental Cosmos was first issued. The encouragement and support of the dental profession in that decade has been most gratifying to those connected with it; having its *name* and *objects* sustained in the cosmopolitan character of its list of subscribers and contributors. Unbiased by sectional feelings, uninfluenced by local prejudices, its field of operations has been the dental world.

The marked recognition which has been accorded to it by leading American and Foreign Scientific, Medical, and Dental Journals; the liberal extracts from its contents; the complimentary notices from time to time, in which writers of Transatlantic reputation have joined, have stimulated to exertion to make it worthy of the continued confidence of the profession, and in the future, as in the past, we shall aim to supply a variety of subjects to meet the multifarious needs of the profession.

A large quantity of material fowarded for publication, from highly esteemed contributors, including an interesting "Miscellany" from recent dental journals, has been of necessity laid over for future numbers.

Of the communications presented in this issue, attention is directed in particular to "Reports of Societies," as a well-timed article; and it is trusted that the secretaries or reporters of societies will bear in remembrance the gentle sarcasm thus facetiously offered, when preparing reports for Dental Journals in the future, and send that only which would be of interest to its readers at home and abroad.

Of the responsibilities and duties devolving upon an editor, none are more embarrassing than that which is involved in returning MSS. to an author as unsuited to the magazine. It may not be amiss in this connection to say that the publication and the editorial management are separate and distinct,—the editor assuming all the responsibilities attendant upon the return of MSS.; and while desirous that the circulation of the magazine may be largely extended, the stoppage of it here or there by a writer who has had a MS. returned, although a subject of regret to the editor, does not otherwise affect or concern him, as no considerations other than those of duty have any control in such decision.

To promote the cause of education, theoretical and practical, foster the formation of societies for individual improvement, and stimulate to new fields of effort, particularly in the use of the microscope, are objects prominently engaging the attention of the editor.

In conclusion, the editor extends kindly greetings to professional brethren and friends, thanking them for the valuable assistance they have rendered in the communications forwarded to the magazine, and the cheering words of encouragement received from colaborers whether at home or residing in far distant sections of his own or foreign lands.

J. H. McQ.

PUBLISHER'S NOTICES.

THE NEW VOLUME.

THIS issue commences the XIIth volume of the DENTAL COSMOS. We have sent bills to those whose subscriptions expired with the last number, and request such as contemplate renewing, or those who intend becoming subscribers, to send in their orders promptly, in order that we may determine the number of copies to print, and that those who desire may be certain of securing complete files of the journal.

Succeeding numbers will be published on the first of each month during the year. Earnest efforts will be made to increase its usefulness, and to make it a practical exponent of the science and art of dentistry. We most earnestly solicit a continuance of the favors of the friends of dental progress, by subscription and by contributions to its pages, and also ask their aid to extend its circulation in the interest of the profession and of science,—that, by the combined efforts of publisher, editors, patrons, and contributors, we may enhance its usefulness and make it indispensable to every practitioner. We also urge upon every one who has not heretofore been a subscriber, to try it for a single year, and see if it does not many times repay its cost. In a word, pledging ourselves to renewed exertions, we invite the co-operation and support of all who desire the elevation of the profession. We shall, as hitherto, adhere to the system of cash payments in advance, experience having shown that in no other way can heavy loss to the publisher be avoided; and, moreover, it is appreciated and prized most when promptly paid for.

This number is sent, with the compliments of the publisher, to the profession throughout the world.

SAMUEL S. WHITE.

PREMIUM FOR SUBSCRIPTIONS.

A Treatise on the Diseases and Surgery of the Mouth, Jaws, and Associate Parts. By James E. Garretson, M.D., D.D.S., Late Lecturer on Anatomy and Surgery in the Philadelphia School of Anatomy; Late Professor of the Principles and Practice of Surgery in the Philadelphia Dental College, etc. Illustrated with Steel Plates and numerous Wood-cuts. In one volume, octavo, 700 pages. Fine toned paper. Handsomely bound in cloth. Price $7.50.

Desirous of extending the circulation of the DENTAL COSMOS, we offer as an inducement to solicit subscriptions, a copy of the above volume, postage pre-paid, to any one who will send us a club of six *new* subscribers for one year, accompanied by the cash for the full amount of the subscriptions—viz., $15.00.

The following notices of Dr. Garretson's work we take from recent issues of the publications to which they are credited:

"It bridges over most completely the chasm heretofore so definitely marked between general and oral surgery. * * * * The tendency of the book, wherever read, will be to elevate dental surgery,—to give to the dentist an extended view of the domain of his operations. It is one of the very few works in our profession adapted to both student and practitioner. It at once comes into the list of text-books for colleges, and should have a place in the library of every dentist, surgeon, and physician. * * * *

"It embraces a large range of observation and practical experiment, such as no other man, in this country, at least, has enjoyed. For this work of labor and love the profession owe Dr. Garretson a debt of gratitude."—*Dental Register.*

"No dental surgeon can consider his library complete or himself fully posted without this invaluable book. It is the most scholarly, and at the same time, practical exposition of the general subject treated that it has been our fortune in a long time to meet, even if it has ever been equaled.

"In respect to its new and multitudinous illustrations, we do not hesitate to say the book equals, if it does not surpass, any professional work issued up to this time from the American press. It is by no means confined to our confrerès, the dentists, but the most accomplished surgeon will find much to interest and instruct. It affords us unusual pleasure to advise each of our readers to buy, read, and rejoice over this really new book."—*Chicago Medical Journal.*

"To those who love a scientific profession, and who appreciate it as more than a mere mechanical calling, the appearance of such a work should be hailed with even more delight than the lover of fiction welcomes a new novel. * * * * As a guide to a wide and solid appreciation of oral surgery, Dr. Garretson's work is invaluable." * * *

"We conclude by saying that, as a text-book it is invaluable, and should be introduced into every college, as well as into every dentist's private library."—*Canada Journal of Dental Science.*

"It seems exhaustive and absolutely without deficiency."—*North American.*

BIBLIOGRAPHICAL.

Evenings at the Microscope; or, Researches among the Minuter Organs and Forms of Animal Life. By Philip Henry Gosse, F.R.S. New York: D. Appleton & Co.

To write upon scientific subjects in a colloquial and familiar style, so as to relieve them as much as possible of the dryness of technical description, and yet, at the same time, to preserve the precision essential to science, is no easy task ; for none but a master can be easy and familiar without being loose or vague. In this respect the author of the above work has been markedly successful, in preparing a treatise written in such an agreeable and instructive manner that it would interest persons having no acquaintance with the subject, and at the same time satisfy the most critical minds with the accuracy of the descriptions and the correctness of the illustrations; thus serving as an admirable introduction to the study of microscopic objects.

The work has the additional merit of being from an actual and careful observer of nature—rather than a mere compiler—who has illustrated its pages with drawings made by himself. It also is gratifying to notice that the usual description of different kinds of microscopes, generally presented, has been omitted. A knowledge of the instrument and its proper use is of great importance, but the repetition of such descriptions in book after book on the microscope, with little if any improvement on Quekett or Carpenter, adds to the size of such works without a corresponding increase of value.

If the various departments of science were presented in the same attractive and satisfactory manner in which this work is written, it would be a great gain to the world by increasing the number who would become interested in scientific studies. The recognition of this fact is becoming more and more thoroughly appreciated, and leading minds are addressing themselves to the *many*, rather than the *few*. And under this new order of things *science* and the *minds* of men are *growing* with wonderful rapidity. J. H. McQ.

The Culture Demanded by Modern Life: a Series of Addresses and Arguments on the Claims of Scientific Education. E. L. Youmans.

Social Statics. By Herbert Spencer.

Heat Considered as a Mode of Motion. By John Tyndall, F.R.S., etc., Professor of Natural Philosophy in the Royal Institution, and in the Royal Schools of Mines.

The above works have been received from the publishers, D. Appleton & Co., New York, and a favorable review of each was prepared for this number of the Dental Cosmos, but owing to an unusual press of matter, they have been laid over until the next number. In the mean time, they are warmly commended to the members of the profession as valuable and desirable works. J. H. McQ.

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

"*New Anæsthetics: Notes on Bromoform, Bromal, and Iodal.* By Dr. Rabuteau. Translated by P. De Marmon, M D., Kingsbridge, N.Y. —The analogy existing between different bodies, in a chemical view, is often continued in their physiological effects. Thus I was led to think that bromoform might possess physiological properties analogous to those presented by chloroform, and that bromal and iodal would produce upon the animal organism some effects similar to those produced by chloral.

"Experience has confirmed my anticipations. The researches I have made so far are not, however, numerous enough to allow positive conclusions. My intention is now to expose before the Academy the first results I have obtained, as I propose to continue actively the study of these new anæsthetics.

"*Bromoform.*—This agent is very little known by chemists. I have prepared myself a small quantity of it, by decomposing with potassa some bromal I had first obtained; this last, in fact, acts like the chloral, —that is to say, that combined with bases it yields bromoform and a formiate.

"The liquid I have obtained has passed through distillation between 60° and 65°, and has presented chemical and organoleptic properties analogous to chloroform, so that it might be mistaken for this last. One of the differential characters is the following: while chloroform dissolves iodine in taking a violet blue color, bromoform dissolves the same metalloid in taking a beautiful carmine red color.

"A rat placed in a glass jar, with a sponge imbued with five or six drops of bromoform, sleeps and is completely anæsthetized at the end of one half to one minute; the anæsthesia lasts two or three minutes. It may be made to last indefinitely by continuing the inhalations of bromoform, after which the animal comes to again completely.

"I intended to anæsthetize a dog by inhalations of bromoform, but the quantity of liquid I had was too small. However, I obtained complete anæsthesia, though the animal was not completely asleep, as had been the rats upon which I operated before. I could prick or pinch the animal under the legs or on the tail without noticing the least sensibility. Its pupils were very much dilated.

"These first trials seem to me to give bromoform some advantage over chloroform; the former may, perhaps, produce anæsthesia, in smaller doses, without producing so deep and dangerous a sleep.

"*Bromal.*—This agent only differs from chloral in this, that the chlorine of the latter is replaced by bromine. I obtained it under the form of crystallized hydrate. Its odor reminds one of that of chloral.

"During its manipulation tears and a nasal flux are experienced.

"The first researches I have made lead me to consider it a body similar to chloral in its physiological effects. A rat subjected to a small dose hypodermically of this compound dissolved in water, begins to sleep at the end of five or ten minutes.

"*Iodal.*—This new anæsthetic boils at 25°, which makes its manipu-

lation very difficult. I have prepared myself a certain quantity of this compound by the ordinary process, which consists in treating iodine with a mixture of alcohol and azotic acid. It becomes decomposed under the influence of bases like bromal and chloral; that is to say, it yields iodoform and a formiate. As well as bromal, iodal excites the lachrymal secretion.

"I have just made an experiment with iodal. Five or six grammes (about ʒjss) have been injected in the rectum. The animal was anæsthetized, but he had some convulsions and died. The blood was black; the flesh was redder than usual; the mesentery, the brain, and the spinal cord were congested; in conclusion, under the influence of a too strong dose, death was the consequence, and the animal presented the same lesions as those produced by chloral in toxic doses.

"The breath of this dog had a very marked smell of iodal, which proves that this substance had not been decomposed in the organism, or, at least, that only a partial decomposition, if any at all, had taken place."—(*Gaz. Hebdom.* and *Med. Gazette.*)

Chloral—its great Value as a Therapeutical Agent.—The Paris correspondent of the *Lancet* says: "Chloral is still the great scientific attraction here, and I believe there is scarcely an hospital physician, or surgeon, or chemist in Paris who is not more or less experimenting therewith at present. Every week fresh results of experiments are brought forward, either at the Academy of Medicine or that of Sciences; and indeed the last sitting of this latter society was unusually interesting, from a medical point of view, on account of the variety of communications on the subject *à la mode.* The results of the meeting were much in favor of Liebreich's views of the properties of chloral, and of its transformation into chloroform when once in the human organism. M. Bouchut's memoir, which formed the main feature of the sitting, clearly expresses these views, while M. Bussy, one of the Academicians, announced a forthcoming communication from M. Personne (a French chemist of great distinction), whose researches on chloral have also turned out in favor of Liebreich's statements. M. Dumas wound up the discussion by a few words of encouragement, most eloquently expressed, to the young medical generation. There was a field, he said, for young medical workers! Two substances, namely chloroform and chloral, which at the time of their discovery had been investigated only in an abstract manner, and from a purely theoretical point of view, have since taken a place among the most precious therapeutical agents, —chloroform for surgery, and chloral for medicine. How many other compound bodies were doubtless in the same case.

"These last communications on chloral at the Academy of Sciences have been the more favorable to Liebreich's views, as all the preceding ones had more or less contradicted them. If you remember, I mentioned at the time that Demarquay, who was the first to experiment here with chloral, questioned the anæsthetic properties of the drug, while admitting that it was a most excellent hypnotic. On the other hand, M. Léon Labbé admitted its anæsthetic properties; but both these investigators denied the transformation of chloral into chloroform. M. Bouchut now declares—and I must sum up briefly, so as not to devote too much of my letter to this subject—that chloral is a powerful sedative of the nervous system, motor as well as sensitive; that it must be employed in a crystallized form, and perfectly pure; that it must not

be administered beyond doses of five grammes to adults, and one to two to children; that it is dangerous to employ it in subcutaneous injections; that it is more speedily absorbed by the rectum than by the stomach; that its action is that of chloroform, into which it is transformed within the human organism; that it brings on sleep, sometimes accompanied by a not unpleasant intoxication, seldom by hyperæsthesia, and most frequently by anæsthesia, which is more or less complete, according to the strength of the dose.

"There is one point which M. Bouchut seems to have investigated with peculiar care—I mean the therapeutical properties of chloral; and as this part of the subject has been less ventilated than that of the physiological effects of the substance, I subjoin, in M. Bouchut's own words, the results of his practice: 'As a therapeutical agent, hydrate of chloral is *the* sedative of violent pain in gout; of the atrocious sufferings occasioned by nephritic colic and dental caries; in a word, *it is the very best of anæsthetics administered through the stomach.* Lastly, it is the quickest and most efficacious remedy in intense chorea, when it is required to abate speedily a condition of restlessness which is in itself a peril to the life of the patient.'"

"*Effects of Tobacco on the Human System.*—Dr. Willard Parker, of New York, says in a recent letter: That tobacco is a poison, is proved beyond a question. It is now many years since my attention was called to the *insidious* but positively destructive effects of tobacco on the human system. I have seen a great deal of its influence upon those who used it, and work on it, or in it.

"Cigarmakers, snuff manufacturers, etc. have come under my care in hospitals and in private practice; and such persons *never* recover soon, and in a healthy manner, from any case of *injury* or fever. They are more apt to die in epidemics, and more prone to apoplexy and paralysis. The same is true, also, of all who *chew* or *smoke much.*

"This poison enfeebles the mind. The Emperor Napoleon had his attention called to this subject in 1862 by a scientific statistician. It was observed, from 1812 to 1862, that the tobacco tax averaged twenty-eight millions of francs annually, and there were eight thousand paralytics and insane in the hospitals of France. In 1832 the tobacco revenue had reached one hundred and eighty millions, and in the hospitals were forty-four thousand paralytics, etc. The undoubted inference is that tobacco has a strong influence in producing these classes of nervous diseases.

"A commission was then appointed to inquire into the influence of tobacco in the schools and colleges. After a full and careful investigation this commission reported that it had divided the people into two classes—the *users* and non-*users* of tobacco, and then proceeded to compare them, physically, intellectually, and morally. The result was that those who do not use tobacco were stronger, better scholars, and had a higher moral record. In consequence of this report an edict was issued prohibiting the use of tobacco in these national institutions, by which thirty thousand persons were at once forced to abandon it."—(*Med. and Surg. Reporter.*)

"*Reserve Power.*—It is not wise to work constantly up to the highest rate of which we are capable. If the engineer on the railroad were to keep the speed of his train up to the highest rate he could attain

with his engine, it would soon be used up. If a horse is driven at the top of his speed for any length of time, he is ruined. It is well enough to try the power occasionally of a horse or an engine, by putting on all the motion they will bear, but not continuously. All machinists construct their machines so that there shall be a reserve force. If the power required is four-horse, then they make a six-horse power. In this case it works easily and lasts long. A man who has strength to do twelve honest hours of labor in twenty-four and no more, should do but nine or ten hours' work. The reserve power keeps the body in good repair. It rounds out the frame to full proportions. It keeps the mind cheerful, hopeful, happy. The person with no reserve force is always incapable of taking on any more responsibility than he already has. A little extra exertion puts him out of breath. He cannot increase his work for an hour without danger of an explosion. Such are generally pale, dyspeptic, bloodless, nervous, irritable, despondent, gloomy—we all pity them. The great source of power in the individual is the blood. It runs the machinery of life, and upon it depends our health and strength.

"A mill on a stream where water is scanty can be worked but a portion of the time. So a man with a little good blood can do but little work. The reserve power must be stored up in this fluid. It is an old saying among stock raisers, that 'blood tells.' It is equally true that blood tells in the sense in which we use the word. If it is only good blood, then the more of it the better. When the reserve power of an individual becomes low it is an indication that a change is necessary, and that it is best to stop expending and go to accumulating, just as the miller does when the water gets low in the pond. Such a course would save many a person from physical bankruptcy."—(*Herald of Health* and *Sci. Amer.*)

Anchylosis of the Lower Jaw.—The Philadelphia correspondent of the *California Medical Gazette* states, that "at the clinic of the Jefferson Medical College lately, Profs. Gross and Pancoast have each had one of those troublesome operations for anchylosis of the lower jaw, which have been brilliantly successful. In the case of Prof. Gross (to whom Mr. Heath has lately paid so deserved a tribute in his 'Diseases of the Jaws'), a young lady of 22, the anchylosis was bony, with complete closure of the mouth, and had existed since 6 years of age, yet by means of the saw, bone-forceps, and wedges, he was enabled to open the mouth to a large extent and without any serious complications. The mouth, too, was so deformed that it had to be reformed by a plastic operation, the flap being taken from the cheek and chin."

Fracture of the Superior Maxillary Bone.—Dr. R. H. McKay, A.A.S., U.S.A., records (*Med. and Surg. Reporter*) the following case of a private, U.S. Infantry, Fort Craig, New Mexico, struck in the face by one of his comrades with a small "hand-axe:"

"The patient was brought to hospital, his wound washed and examined; the corner of the axe had grazed the frontal bone over the minor angle of the orbit, then descending upon the face quite close to the base of the nose, caused a very considerable flesh-wound of the face. The examination was then continued to the inside of the mouth, when the full extent of the injury was more apparent. The bone was observed to be fractured from a point commencing between the central incisors in

front, extending thence directly back along the course of the suture, between the maxillary bones, for about one inch in extent; thence curving backward and outward, terminated between the last bicuspid and first molar teeth. This whole piece, including the teeth, was forced down into the mouth, the posterior portion of it a full half inch below its normal position, while the anterior portion was displaced to about half that extent. I experienced considerable difficulty in replacing the fractured portion, but, after several unsuccessful efforts, succeeded so perfectly as to justify the belief that it would remain so without artificial means for its support.

"The treatment consisted of cold water locally, until inflammatory action had ceased, then simple cerate dressings, observing the usual precautions of keeping the wound thoroughly cleansed. This, with perfect rest of the jaws, except so much as was necessary in taking liquid food, constituted the entire course of treatment. The fracture in the roof of the mouth healed very rapidly, so much so that in a few weeks' time only a cicatrix served to mark the line of fracture The wound upon the face still continues discharging a small amount of pus, with occasional spiculæ of bone, but the patient has so far recovered as to perform duty as cook for the company, and only complains of want of sensation of the fractured part, which is not to be wondered at when we consider the amount of displacement that existed at the time of the injury. I think, too, that the discharge from the face is likely to continue for some little time, as, of necessity, there must be a very considerable amount of detached pieces of bone yet to come away; yet the progress which the case has made thus far encourages the belief that perfect recovery, with perfect adaptability and use of the injured parts, will speedily ensue."

—

" *Conservative Surgery.*—Dr. Antonio Picioni, of Bastia, relates an interesting case of conservative surgery, in a recent number of the *Tribune Médicale.* About twenty-five years ago a boy six years old was brought to his office, with the third phalanx of the right index completely disarticulated by the fall of a sharp-edged stone upon it. The phalanx hung only by a very small shred of skin on the palmar surface to the remainder of the finger. Dr. P. proposed to remove it with the knife, but the child made such an outcry that, without any real hopes of preserving it, he bound the fragment with great care in its natural spot, and fastened it with splints. The child was bled slightly and the cold water dressing applied. To his astonishment he found that in three days the parts had united by first intention, and in a few weeks no sign of the wound was visible."—(*Med. and Surg. Reporter.*)

—

Conservative Surgery.—Dr. P. Campbell states: "Some time ago, a man about 60 years of age, when in a state of intoxication, fell downstairs one evening about nine o'clock. Next morning, about the same hour, having come to his senses, he called upon me with a compound dislocation of the last phalanx of the thumb backward, the soft parts being completely disrupted for two-thirds of the circumference on the palmar aspect, and the ends of the bones quite denuded and dry. I replaced the dislocated phalanx easily, applied water dressing and a bandage. In a couple of days, to my agreeable surprise, the wound had healed by first intention—there was no subsequent irritation, and

the mobility of the joint remained unimpaired, with the exception of flexion being temporarily curtailed."—(*Med. Times and Gazette.*)

"*Alimentation of Patients on whom Excision of Bone has been performed.*—M. André Sanson, in a paper read at the Academy of Medicine (*Gazette Médicale*, August 14, 1869), calls the attention of French surgeons to the fact that, to promote osseous growth, the administration of phosphate of lime, either in the shape of hypophosphites or in that of powdered bone, is unavailing. Several attempts made with these substances have never been successful. It is because their form does not allow of their digestion and assimilation. On the contrary, earthy phosphates, such as are elaborated by vegetables, are real aliments, and their effects on animals fed with grains prove it sufficiently."—(*New York Medical Jour.*)

Excision of Tongue. By Thomas Nunneley, F.R.C.S.—"The removal of the entire tongue is altogether a modern surgical operation. Though, for time out of mind, greater or less portions of the tongue have been removed by cutting instruments, escharotics, actual cautery or ligatures, the importance of the organ in deglutition and articulation, the difficulty of reaching its base, and especially the fear of not being able to arrest the hemorrhage, owing to the depth of the wound, the size of the arteries, and their near origin from the carotids, have not unreasonably deterred attempts at more than partial amputation of it. I believe it was Mr. Syme who first suggested an operation for its entire removal, and performed it in the presence of many members of the association, when its meeting was held in Edinburgh. Unfortunately, that patient, as well as a second, died a few days after the operation; and a solemn warning was published by Mr. Syme, who declared that the operation was so serious that further attempts were not justifiable, as no one could recover from it. Subsequently, I believe, in a third case, Mr. Syme was, by a like proceeding, rewarded with success; and Mr. Fiddes, in Jamaica, and Dr. G. Buchanan, in Glasgow, have also succeeded by the plan laid down by Mr. Syme. However, believing that the severity of the operation depended far more upon the method of proceeding than upon the mere removal of the tongue itself, I devised what I hoped would prove to be a less formidable one, and which experience has proved to be so. Up to the present time I have removed the entire tongue nineteen times, and Dr. Fenwick, of Montreal, has done the same operation once, without any untoward symptom following in a single instance. In most cases, the patient has not required any after-treatment, being able to sit up the following day, and in ten days to be considered well. In the majority of operations not a drachm of blood has been lost. In two cases only has there been any hemorrhage, and in those not more than half an ounce of blood was lost. In one a point of hot wire, and in the other a ligature, at once arrested the bleeding. The little constitutional disturbance which follows this operation is surprising; indeed, in the majority of cases, there is none. Now, I do not for one moment assert or believe that this operation will permanently eradicate cancer of the tongue, or prevent its recurrence, any more than the removal of the disease by the scalpel in any other part of the body will secure immunity for the future; but this I do declare, that, by affording an easy and safe method of getting freely beyond the

disease, and demonstrating how very little inconvenience in articulation and deglutition is caused by the ablation of the entire organ, it will encourage much earlier resort to the operation than would otherwise be thought proper; and thus, so far as operation can do, cure the patient." —(*Med. Times and Gaz.*)

Cancer of Tongue.—"Dr. Weisse stated to the Medical Society of the County of New York (*Med. Record*), that Déclat had, in 1865, published a work on new applications of carbolic acid, in which he mentioned two cases of cancer of the tongue treated by this agent, and ten cases whose treatment was not then completed. He had since issued a work giving reports of thirty-nine cases of cancer of the tongue, twelve of them of doubtful diagnosis. His local treatment consisted in applying, in spray, to the ulcerated surface a solution of five parts of the crystallized acid in ten parts of alcohol and one hundred of water. In some cases, where a whitish film covered the ulcer, he employed a caustic solution of equal parts of the crystals and absolute alcohol. Internally he gave a solution of one part of the acid in two hundred of simple syrup, a fluidrachm every three or four hours. If this quantity produced nausea, as was sometimes the case, the dose was diminished. The remedy acted as a local anæsthetic, promoted sleep, and improved the appetite. Sometimes, when the patient was in bad condition, he gave the bicarbonate of potassa or soda, in conjunction with the carbolic acid, following the recommendation of Broca. Occasionally, also, he combined with the acid the arsenite of soda, or the bichloride of mercury. By this treatment Dr. Déclat had succeeded in curing all the doubtful cases, and ten out of fifteen where the diagnosis was positive. In five of these latter the treatment failed completely. In two of the ten undoubtedly cancerous cases relapses occurred, which were successfully met by the same treatment. In some of the cases clearly diagnosticated, the treatment was continued for a year and upward before the cure was pronounced complete."

"*Contracted Mouth; Case operated upon successfully.* By Mr. Morgan, F.R.C.S.I., Surgeon to the Mercers' Hospital, etc., Professor of Surgical and Descriptive Anatomy, R.C.S.I.—The difficulty of preventing contraction from cicatrization in parts already condensed by diseased or ulcerative action, and particularly when in the neighborhood of natural orifices, is well known in surgical practice. When occurring at the mouth, this contractile tendency is a source of great trouble, not only by reason of the deformity, but from the consequent difficulty of speech and the great inconvenience in taking food—the use of solid aliment being, in fact, all but precluded.

"The subjoined case illustrates a successful operation under circumstances of unusual difficulty. The deformity was of old standing, and the parts had suffered from several outbreaks of disease and ulcerative action; the mouth and parts around had now been the seat for many months of lupoid ulceration, mixed with a syphilitic taint, which had caused, in the process of cicatrization, great condensation of the lips and cheeks generally, and adhesions between the cheek and the gum of the upper jaw. The mouth was reduced to the smallest dimensions, and would absolutely not admit the point of the little finger; there was also a hardened papillary growth on the lower lip. The pa-

tient had not taken any solids for months, and had to use a kind of little ramrod to introduce his food through the narrowed and immovable opening His speech was necessarily imperfect, and any continued conversation impracticable. The patient was thirty-five years of age, much broken down in health and spirits, and urgently sought relief from the gradual narrowing of the orifice and from the ulceration which still existed.

"He had suffered from exfoliations of the forehead and osteoscopic pains, and the tongue was painful from ulcerations, which could not be treated by any ordinary local stimulation.

"Large doses of iodide of potassium were administered; a tongue-bath of black-wash, used twice daily, and good diet ordered.

"After five weeks the ulceration of the lips and mouth had much improved, and when the healing process had completed itself I adopted the following procedure in order to insure as much as possible against contraction:—I passed a full-sized Chassaignac's drainage tube through the cheek, about three-quarters of an inch from the angle of the contracted mouth, and retained the tube in this position, acting as an issue till cicatrization had taken place around, and a fistulous orifice, in fact, formed; this occupied about fourteen days in its production. I then from this point carried two incisions toward the mouth, and removed a rather wedge-shaped piece, its apex being at the fistulous opening produced. This was followed by a satisfactory result; the parts gradually healed, but some contraction nevertheless occurred to about one-half. When this side was tolerably healed I adopted a similar proceeding at the other, but I took care to increase the distance from the angle of the mouth; after fourteen days, when I found the tubing had sufficiently established a fistula, I took away also a wedge shaped piece, as at the other side, and adopted every precaution to prevent further narrowing. I gained on this side more than half the distance. The mobility of the jaws was perfect; the patient had lost many of the teeth by ulceration of the alveoli, and the integument over the chin was drawn as tightly as it is possible to conceive.

"The comparative illustrations of the condition before and after operation will show the great narrowing that had taken place, combined with increased density, almost of a cartilaginous firmness, and the improvement gained.

"The repair of the general health, and the rapidity with which he regained his weight and strength, were remarkable in this patient; he felt so strong shortly after being operated on as to leave hospital and go to work.

"The use of the tubing, and the formation of a fistulous point to act from and insure a permanent angle to the lips, I found most satisfactory as the main cause of a perfect result to the patient; the tendency to contract and curtail the natural opening was most persistent."—(*Medical Press and Circular.*)

Tooth driven into the Antrum by a Fall.—The clinical reporter of the *Med. Times and Gazette* states that he "saw a curious case, under the care of Mr. Haynes Walton, in the St. Mary's Hospital, of a man, aged 35, who, three years and a half before, had sustained a severe fall, in which he had lost one of his front teeth—the right upper lateral incisor. A few weeks later, after much pain and swelling in the upper jaw, an abscess formed, and discharged through a small opening in the

cheek, as well as through the alveolus of the lost tooth. The case was supposed to be one of caries of the maxilla, and many naval surgeons treated the man under this belief, but without alleviating the symptoms. When he came under Mr. Walton's care there was considerable swelling of the side of the face, much pain and constant profuse discharge from a sinus in the right cheek half an inch outside the nostril. The discharge from the alveolus had stopped, and the bottom healed over. On probing the sinus in the cheek, Mr. Walton was convinced that he detected the smooth, hard surface of tooth enamel, and he accordingly enlarged the opening and extracted with forceps a perfect incisor tooth lying loose in the antrum. When he saw the man, eleven days after the operation, the wound was all but healed, and pain and swelling quite disappeared."

"*Syphilis communicated by Sugar-teats.*—Speaking of the communication of syphilis by 'sugar-teats' passed from the mouth of one person to that of another, Niemeyer says he has treated and shown in his clinic a family of ten persons, children, parents, and grandparents, who all had syphilitic ulcers and condylomata of the oral mucous membrane from this cause. One might infer that both syphilis and sugar-teats abound in Tübingen."—(*Pacific Med. and Surg. Jour.*)

"*Syphilitic Infection.*—A correspondent of *The Lancet*, 'A. M.,' whose name I should like to know, as I am indebted to him for one or two very pertinent remarks on a case published in your number of Nov. 6th, asks me how I make out that the younger girl mentioned in that article was infected by means of her sister Esther. The elder sister, Esther, was bitten on the lower lip by a baby taken by her mother to nurse. This child had all the symptoms, as far as I can hear, of being syphilitic—snuffles, eruption, and sore-mouth. A few weeks after the bite, Esther had a large indurated lump at the spot where she was bitten, with enlarged and hard submaxillary glands. 'A. M.,' if he has had much experience, will know that such modes of infection are not extremely rare. This elder girl slept in the same bed with Martha, and some months after her infection, the latter became also infected. In this I see nothing very mysterious, nor anything which a person well acquainted with syphilis would require to put any question about. Perhaps it is curious that something like a hard sore was found on the left lip of the vulva of Martha; but 'A. M.,' of course, is aware that mucous membranes are much more easily attacked than the skin of the body. I may add that I have during the last ten years collected at least eight or ten cases of communication of syphilis by means of the saliva, etc.; and I refer my skeptical *confrère* to the admirable treatise of Mr. B. Hill for other well-observed cases of what is now admitted since M. Auzias-Turenne first called attention to it."—(Charles Drysdale, M.D. *Lancet.*)

Sulphocyanides in the Saliva.—The *Medical Times and Gazette* says that "Dr Leared, in certain researches he has made, and which in abstract have been published in the *Proceedings of the Royal Society*, has come to the conclusion that sulphocyanides not only occur normally in the saliva, but also in the urine, the blood, and the white of egg. He found that their absence in the saliva corresponded with an impaired condition of health."

"*Submaxillary Calculus.*—Dr. Little exhibited to the New York Pathological Society (*Med. Record*) a calculus removed from the duct of the submaxillary gland. For two or three years the patient had complained of swelling under one side of the lower jaw. Suppuration finally took place, and an opening formed, first discharging pure pus and afterward a thin, glairy fluid. On passing the probe into the opening, a calculus was encountered and easily removed."

Electrical Explorator. M. Trouvé (*Les Mondes* and *Chem. News*).—"Although this subject does not exactly bear upon chemical science, we may call attention here to what is stated in the original. The explorator alluded to is a small instrument destined to detect, by means of electricity (galvanic current), any metallic or other objects, but especially rifle-balls and pieces of shot and shell, which may have penetrated the body or limbs of men and animals. At an exhibition recently held at the Hague, of objects relating to army surgery, and the necessary means of taking care of the wounded in battles, Dr. Winkhuijsen, physician to His Majesty the King of the Netherlands, ingeniously introduced, in limbs made of plaster of Paris, different projectiles of iron and lead, and was thus enabled to exhibit the action of this very useful instrument, by the aid of which, even though no open wounds exist, the presence of such projectiles may be readily detected with certainty, and the extraction proceeded with. Not only metallic, but also stone and wooden objects, which might have penetrated, can be detected."

Aspirateur Sous-cutané, by Dr. Dieulafoy.—The *Medical Times and Gazette* contains an engraving of a new suction and injecting syringe which promises to prove useful in the treatment of purulent and other fluid collections in the antrum and about the mouth. The writer says: "The two cases in which I have witnessed its employment were, one an enormous effusion into the synovial cavity of the knee-joint from blennorrhagia, the other a hydatid cyst of the liver. The liquid was withdrawn in both cases without the least difficulty or accident whatever, although the fluid in the first was of a syrupy consistence. The great advantage of the instrument, besides continued aspiration, is the very minute calibre of the trocar, a true capillary form, and which may be introduced into many organs without danger. The author recommends the instrument not only for the treatment of serous, purulent, or hæmatic effusions into natural or accidental cavities, but also as a means of diagnosis of such morbid collections; and it is in this latter capacity that much service may be expected from its use. In deep-seated abscesses, for instance, where fluctuation is almost imperceptible, or in collections where the nature of the liquid is not understood, and where an exact diagnosis is desirable before surgical intervention, this instrument can be of great value. The lower cock, which upon being opened allows the aspirated fluid to escape from the barrel of the pump, also serves to aspirate a medicamentous liquid in case an injection is deemed necessary. Thus, after withdrawal of the morbid liquid, an injection may be practiced without removing either the trocar or the pump."

Functions of Vaso-motor Nerves.—The *Lancet* proves that Brown-Séquard instead of Claude Bernard is entitled to the credit of having first demonstrated the functions of the vaso motor nerves.

Oxygenesis. M. Delaurier (*Comptes Rendus* and *Chem. News*).—"The author states that, when manganate of lime is heated, oxygen is abundantly given off, and that by means of this salt it may be made very economically."

Nitrogenesis. M. Levy (*Jour. de Pharm. et de Chimie* and *Chem. News*).—"When bichromate of ammonia is heated in a retort, that salt is converted into green sesquioxide of chromium, vapor of water, and pure nitrogen."

"*Removing Stains caused by Photographic Chemicals from the Hands.* M. Fortin (*Les Mondes* and *Chem. News*).—Referring to the use of cyanide of potassium, and of iodide of potassium, and iodine for this purpose, the author says the first endangers health, and even imperils life; the second is very expensive. The author recommends instead, to wash the hands with a concentrated solution of either sulphate or chloride of zinc, to which some acid is added at the same time. The deepest and blackest stains should be touched with metallic zinc, whereby the reduction of the oxide of silver or that of the gallate of iron is promoted, and all metallic stains adhering to, or penetrating in the skin removed. Since most of the salts of zinc are colorless, and soluble in water, the hands become soon quite clean. They should then be washed, first with pure water, and next with soap and water."

"*Vulcanized Caoutchouc.* M. Mouton (*Cosmos*).—In order to give to vulcanized caoutchouc all that softness which is requisite, for instance, for printing-ink rollers, the author reduces ordinary vulcanized caoutchouc to powder, places it in suitably-shaped vessels, and submits it a second time to the temperature required for vulcanization. By this means it is rendered soft and smooth, has entirely lost its usual harshness, and is fit for various uses—among these the making of durable printing-ink rollers.—(*Chemical News.*)

"*Electric Alarums to Indicate a Certain Temperature.* MM. Besson and Knieder (*Revue Hebdomadaire de Chimie* and *Chemical News*).—The authors have constructed a set of thermometers, through the tubes of which are soldered two small pieces of platinum wire, which are not in metallic contact until the mercury just rises to the height at which the wires have been placed. Since the latter are in contact with conducting wires to a suitable galvanic apparatus, the instant the mercury makes metallic contact, an alarum is sounded; and this may, of course, by proper adjustment, be affected at any temperature, which, for some purpose or other, should not be exceeded. The instrument is intended for industrial use."

Cement.—J. M. Benthall writes to the *Sci. Amer.*: "I have used the compound of glycerin, oxide of lead, and red lead, for mending a large cast-iron kettle that had been fractured across the bottom by allowing water to freeze in it, with the happiest results. It takes some little time to dry, but turns almost as hard as stone, and is fire and water-proof. For mending cracks in stone or cast-iron ware, where iron filings cannot be had, I think, it is invaluable.

"My method was as follows: Take litharge and red lead, equal

parts, mix thoroughly and make into a paste with concentrated glycerin to the consistency of soft putty, fill the crack and smear a thin layer on both sides of the casting so as to completely cover the fracture. This layer can be rubbed off if necessary when nearly dry by an old knife or chisel."

"*Varnish in Burns.*—Paris is much interested in a remedy discovered by a workman, who, to relieve the pain from a severe burn, thrust his hand into a pot of varnish which happened to be at his side. The relief was so sudden, and the healing of the wound so rapid, that the news spread, with the result of bringing to him every one in the neighborhood who had a burn. Many wonderful cures are said to have been performed at the time of the great explosion in Metz, last September, and the discoverer has been summoned to Paris, to make some public experiments."—(*Journal de Chimie* and *Boston Journ. of Chem.*)

"*Country Air and City Air.*—M. Houzeau has demonstrated that the air of the country differs remarkably from that of a great city. The former is strongly disinfectant, has a far greater bleaching power, and, especially after the fall of rain, has a decidedly more marked effect upon bright and oxidizable colors. All kinds of woven fabrics—linen, cotton, or woolen—are much more rapidly bleached in the country than in the city, even when the exposure to air and sunlight is precisely the same. It is likewise true that under the influence of country air many dyed tissues fade sooner; and that iron, steel, and even copper, become more quickly rusted."—(*Boston Journ. of Chem.*)

"*Anti-Rust Varnish for Iron and Steel.*—Such a varnish, according to the *Manufacturer and Builder*, may be made of

Resin	120	parts.
Sandarac	180	"
Gum lac	60	"
Essence of turpentine	120	"
Rectified alcohol	180	"

"Pound the first three ingredients, digest them by a regular heat until they are melted, and add the turpentine very gradually. After complete solution has taken place, add the alcohol, and filter through fine cloth or thick filtering-paper. The varnish should be kept in well-stoppered bottles."—(*Boston Journ. of Chem.*)

"*Chloride of Gold.*—M. Debray (*Compt. Rend.* and *Chem. News*). The author says it is a well-known fact that when chloride of gold is submitted to a temperature of about 200° it is first decomposed into protochloride of that metal and chlorine, and, if the temperature still rises, into chlorine and metallic gold. It is, however, possible to obtain crystals of chloride of gold by sublimation, by the following process: A current of chlorine gas is made to act upon gold beaten out to a thin foil (not gold-leaf), placed in a glass or porcelain tube, and heated to 300°, at which temperature the volatilization takes place and ruddy-colored crystals of the chloride are obtained. The author observes that Boyle was the first who stated that chloride of gold is volatile, to some extent, without dissociation."

THE

DENTAL COSMOS.

NEW SERIES.

VOL. XII. PHILADELPHIA, FEBRUARY, 1870. No. 2.

ORIGINAL COMMUNICATIONS.

ADHESIVE GOLD FOIL—ITS DISCOVERY, HISTORY, AND USE.

BY. A. WESTCOTT, M.D., D.D.S., SYRACUSE, N. Y.,

FORMERLY PROFESSOR OF OPERATIVE AND MECHANICAL DENTISTRY IN THE BALTIMORE COLLEGE OF DENTAL SURGERY, AND LATE PROFESSOR IN THE NEW YORK COLLEGE OF DENTAL SURGERY.

THERE is perhaps no one principle connected with dental operations of greater moment, or whose value is more universally acknowledged by the profession, than the *adhesiveness of gold*, either as foil, sponge, or however gold may be prepared, to make this principle available in filling teeth. Before this principle was discovered, the theory of making fillings permanent was, to a large extent, that they were kept in by leaving the orifice through which the gold is inserted smaller than the cavity within, and they were thus "dove-tailed" into the tooth. I have now in mind an advertisement issued *more than thirty years ago*, by a dentist who now stands at the very head of the profession, as an operator, which read substantially as follows: "I insert my fillings in such a manner that they never come out, which I do by making the cavity *inside* much larger than the orifice through which the gold is inserted, thus giving it a firm mechanical holding." Now, this was a good, frank avowal of his way and manner of operating, and showed that he was then, what he has ever since proved himself to be, *an honest man*. This was, moreover, a *taking* advertisement; for in a very short time this young man was doing a fine business in a small country village, where, previously, dentistry had hardly been heard of, and I have to confess that I looked upon this representation myself with no little admiration.

I have for a very long time been intending to prepare a paper upon *the origin and history of adhesive gold foil*, but have been waiting for the legion who have from time to time laid claim to originality in the discovery of this great dental fact,—that gold is susceptible of adhering to itself, or of being virtually welded at common temperatures,—to write out their respective claims, feeling that when all the rest were through, I

would bring up the rear. How far or how perfectly I have thus been outflanked I shall let dates and facts speak for themselves.

In the spring of 1840, I was practicing dentistry in Homer, Cortland Co., N. Y., and ordered from T. B. Fitch, Esq., then a druggist at Syracuse, now an eminent banker of this city, and who well remembers the circumstance, an eighth ounce of gold foil by *mail.* It being in the days of high postage, and Mr. F. knowing that my extra pennies were few, undertook to do me the favor of economizing for me, by removing the intervening papers from between the leaves of foil. I received the foil in this way, and to my surprise, and I may well say, dismay, I was wholly unable to separate the leaves of foil from each other. They had, by some magic, which had never before come to my notice, literally "grown together." What was to be done? I was not only *foiled* in regard to my promised operations, but I must await the going and coming of the slow coach, the long distance of thirty miles, before I could take another step, and meanwhile writhe under the uncertainty of being able to better myself after all. More than this, I was in danger of suffering (for me) a heavy pecuniary loss, unless I could convince Mr. Fitch that the responsibility was upon his shoulders, in consequence of the blunder which he had committed, in the removal of the aforesaid papers. Here was presented to my mind the triple misfortune of the probable loss of my "job," the actual loss of two or three days' time, and the possible loss of a whole eighth ounce of gold foil!

This was surely a time for meditation and reflection, and I did reflect. This may possibly provoke a smile from some reader, but it must be from some one who did not begin the world as I began it. In all this there was to me "no levity." But in my sad ruminations I did not allow myself to forget the necessity of prompt action. I immediately wrote a sharp letter to Mr. Fitch, which was not mollified with a single expression of gratitude for his well-meant effort to do me a kindness, asking him immediately to replace the foil, by sending, "per first stage," another parcel, and with the strong injunction, to *leave the papers where he found them.* All this was as new to him as to me, and at once falling in with my suggestion, that "there must be something wrong about the *foil*," he immediately wrote to Mr. Barrett, of Albany, who made the foil, for an explanation. As soon as the then slow mails could bring it he received a reply from Mr. B., which he lost no time in forwarding to me, apologizing to Mr. F. for having sent him such a batch of foil, and adding that, "once in awhile, foil would prove *sticky*, but he never sent out such foil when he knew it,"—all of which would have been very consoling to me had it accompanied the original package of foil sent me by Mr. Fitch.

But this information, "for immediate use," came too late. My reflections, ere it came, had taken another and very different channel. As soon as the shock was over, I began to inquire into the probable

cause of this result, and as to whether it did not present an idea which might be made available. The question soon arose,—*If gold foil might be thus virtually "welded" in a mail bag, why not in the cavity of a tooth?*

I lost no time in putting this question to a full practical test. I began my experiments by screwing together two plane surfaces of ivory, and drilling a hole at their joining, so that when taken apart one-half of the hole would be in each piece. I could in this way easily remove my filling packed into this cavity. This I did repeatedly, till, by hammering, and otherwise testing these fillings, I became perfectly satisfied that I could make, of any number of pieces or pellets, *one solid, integral piece* that would take and retain a polish under any circumstances; and I can here truthfully add, that the first filling in the mouth which I did with this foil, was the first perfectly polished filling that I had ever seen. Thus was my vexation turned into a joy, "far more exceeding;" and before Mr. Barrett's letter reached me, which I think was in about ten days, I was ready to contract for all the "sticky" foil I could get; and the moment I got his letter, addressed to Fitch, I wrote him (B.), asking him to save all of his "sticky" foil for me; and I continued to get such foil of him, from time to time, while he remained in business, or till Watts found a method of producing such foil with certainty and uniformity. After satisfying myself that the adhesiveness of foil could be relied upon, the next question which arose was, What were the conditions necessary to secure it? or, on what principle was it effected? I became satisfied that the cohesion or adhesion (for these terms, for all practical purposes, are synonymous) was something more than an interknitting of particles,—it was a surface joining, and was none other than that *cohesion* exhibited by two lead bullets when two fresh-cut surfaces were pressed together, the two becoming almost inseparable.

Looking upon the phenomenon as simply *co*hesion, I at once concluded that the rule laid down in all works on natural philosophy, in order to secure cohesive attraction, must be observed, viz.: that "the particles, or bodies to be made coherent, must be brought in *actual contact*." In other words, the foil must be positively free from *all* foreign substances. Any one will find, by trying the experiment, that in the case of the lead balls, above referred to, that if he simply draw a finger over the fresh-cut surfaces, it will effectually break up their otherwise strong tendency to cohere. Foil, then, even when of the "sticky" variety, must be kept perfectly free from *every* foreign substance, such as dust, soil, and especially from moisture. How frequently is the operator first notified of unseen moisture by the fact that his pellets won't adhere? And he might as well dip them into oil, as in water or saliva, if he wishes to avail himself of this quality of adhesiveness.

From such facts and considerations comes the rule,—*Keep your foil positively dry during your entire operation.*

How operators have acquired prominence by submarine fillings, I have yet to learn. I have always supposed, however, that their pluggers were made of a goose-quill or other *pen*, and I fancy that such is not the kind of greatness to be marred by distance. To say the least, I do not believe that a *close* inspection of such fillings ever produced much "enchantment." Why adhesive foil loses this quality, simply by keeping, and why heating restores it, are questions which must have occurred to all. Is not the former question chiefly answered by supposing that it absorbs moisture, and the latter, that this humidity is dissipated by the heat?

But, to return more directly to the subject of this paper: I will say that from that day till the present time I have used adhesive foil in greater or less quantities, and with various modifications, till my present practice varies very materially from my early experience and practice with such foil. My discovery of, and experiments with, adhesive foil I immediately communicated to such dentists as I chanced to meet; for it will be understood that they were not as plenty in 1840 as in 1870, and the *adhesive principle* was as little understood and practiced among themselves, as was this principle or its application to gold, in filling teeth. It will also be borne in mind, that at that time there was but one dental journal published in the United States, and that but just started. I think that the first article of mine which was ever published in a dental journal (and this was not written for publication) was my essay on "Dental Caries," read before the American Society of Dental Surgeons, in July, 1843, and published the following September. It will be thus seen why I did not immediately *publish* the result of the *accident* above alluded to.

I very soon discovered that to work such gold foil to best advantage I must modify my instruments, and different experiments very soon (within a few weeks) brought me to the conclusion that serrated points were, better than any others, calculated to work it with ease and dispatch, and I accordingly altered all of my pluggers to conform to this idea. These were the first set of the kind which I had ever seen or heard of. Perhaps this paper may meet the eye of some one who can antedate me. This is certainly possible, and would in no wise detract from the originality of *my* discovery. Nor would it be the first time I have myself been caught in a similar trap. I have sent many a supposed invention to the Patent Office, to be told that the invention was older than him who claimed it. My communications upon the subject have hitherto been oral, partly for the reasons already given, and partly because I have never happened to get about it. And even now, my writing this paper is about as purely accidental as was the discovery of which it treats.

But notwithstanding I have not *written* anything upon this topic, I have never failed to talk upon it with every dentist who has expressed any interest in it. My theory and practice have ever been, that no *professional* man has any right to withhold any fact or process from a professional brother, which would be useful to him, and which pertained to their common profession, nor to tie up such information by a *patent.* I have procured, within the last twenty years, about thirty patents for my own inventions, but no one of them has, in the remotest manner, pertained to the profession of dentistry in *any* of its branches, notwithstanding I can claim to have furnished, both to the operating-room and laboratory, many things and appliances which I knew to be patentable. Indeed, the discovery about which I am now writing was a most proper subject for a very valuable patent. "Dow, Jr.," wrote what he called "patent sermons," but I never heard of his being a communicant in good standing in any *orthodox* church.

From 1840 to 1846, inclusive, I probably conversed with one hundred or more dentists upon the subject of this paper, and freely communicated to each and all every fact which I now set forth. In 1846 I became connected with the Baltimore College of Dental Surgery, as Professor of Theory and Practice, and gave a lecture upon this topic before the students in February 1847. Having given notice to Professor Harris that I was to give such a lecture, he invited all the dentists of the city* to be present, and many of them were present. While I was discussing this special topic, if I could not discern most plainly upon the countenances of some of them the smile of derision, it was clearly that of unbelief. The "welding of gold," at common temperatures, seemed an absurd not to say a ridiculous doctrine.

Among the gentlemen present at that lecture, was the late Dr. E. Townsend, of Philadelphia, with whom I had previously conversed upon this subject, and who had expressed a deep interest in it. He expressed strong desire to see this principle demonstrated by one who had had some experience in the matter, and gave me a pressing invitation to spend a day or two with him, at his house in Philadelphia, on my way home. To this I agreed, and instead of spending "a day or two," I spent a full week with him, and filled teeth each day from two to four hours. My first patient was the doctor himself. I filled a compound cavity for him, in an upper molar, in which I put nine sheets No. 4 foil, which filling he carried with him to his grave.†

---

* Baltimore.

† Since the preparation of this paper, in looking over my correspondence with Dr. Townsend, I find in one of his letters, dated July 9th, 1847, the following playful allusion to this filling. In alluding to a "Mr. Lawrence" as the inventor of an appliance for holding napkins, he says: "You must recollect him as one of our party who stood over you at 'Broad Street House,' and saw you place that beautiful *door-plate* in my mouth which still gives out its golden

During each of these sessions there were present, on his invitation, several dentists to see (to use his own language) "Dr. Westcott's new method of using gold foil." I have been a little particular in recounting these circumstances, as his reticence in regard to myself, in a paper which he read some years afterward upon this subject, might not seem to tally with these statements. I am unwilling to think that he intended to do me injustice, but simply forgot to mention my name in that connection. When I went to his office, as above mentioned, he had not a single plugger with serrated points, and he for the first time and under my directions altered several to meet this end. I doubt not that there are several gentlemen still in practice who can fully corroborate the statements made above, and if this paper should chance to meet the eye of either of them, I should be much obliged if they would communicate with me upon the subject.

From that day to this I have used "sticky foil," and, as I have already said, with various modifications, till my present practice varies widely from that first adopted with such foil. Now, for the sake of comparing notes with other practitioners, or to enable them to compare their practice with mine, and not for the sake of advocating any special practice, as the *ne plus ultra*, or of raising a standard which no one need aspire to, by some different mode, I will describe briefly my present manner of using gold foil; for, among the different discoveries which I have made, is that *many others* bring out just as good operations as I can, by my method of filling teeth, by modes and manipulations which would prove a perfect failure in *my* hands. But while I condemn no one's method, I may be allowed to prefer some one practice as having, in my judgment, advantages over others. Formerly, or in the early stages of my practice with adhesive foil, I used it to fill the entire cavity, whether great or small, but now make the following modifications:

1st. I seldom or never now fill a cavity entirely with adhesive foil.

2d. I now use from eight to ten times as much *soft* foil, on the average, as I do adhesive foil.

3d. *I uniformly use both kinds in filling the same cavity*, unless it be a very small cavity, in which case I generally use adhesive foil only.

4th. *I uniformly use my soft foil in the form of cylinders*, varying in length, diameter, and compactness to suit the circumstances of the case.

---

lustre as brightly as at first." The doctor's allusion to this filling as a "*door-plate*," not only had reference to its great size, but its covering the whole anterior surface of the first upper molar, forward of which one or more teeth had been extracted: it could be seen at a considerable distance, whenever he opened his mouth, or even in ordinary conversation.

5th. In each and every case I continue to use cylinders so long as I am sure that every part of the cavity can be reached by them, and they can be made as solid and secure as if done by pellets of either kind of gold.

6th. After the operation is carried as far as it can be with *certainty*, with cylinders, I then use firm but small-pointed instruments (pluggers) *with but little taper*, and pierce any and every part of the filling, and treat these permeations as new or original cavities. *These I fill with adhesive foil*, and this is now the only way or manner in which I use adhesive foil.

There are not a few good operators who have strong prejudices against the use of cylinders, but I am quite sure that their want of success in their use grows rather out of their want of practice with them, than from any inherent objection to their use. This may also arise from making them from improper foil, or from not knowing how to prepare and vary them so as to use them with certainty and ease.

In regard to the kind of foil of which cylinders should be made, it is a matter of the greatest moment that it be *soft* foil, in the strictest sense of the term. The most practiced hand will fail to do perfect work, if the operator is not careful to secure foil which is *positively* soft. In regard to the size, length, etc. of these cylinders, common sense dictates that they must be varied to suit the size, shape, and depth of the cavity in which they are to be used; but one precaution must not be overlooked, viz., *they must not be too large.* Better by far err in the opposite direction,—using more time and smaller cylinders. In any given operation we begin with a cylinder as large as can with certainty be introduced and perfectly packed, and continue by using them smaller and smaller, till they can no longer be inserted without crushing. They must never be so large as to crush before reaching the bottom of the cavity into which they are to be thrust, and when this can be no longer done with *certainty*, then is the time to stop the use of cylinders, and begin with pellets of adhesive foil. In large cavities we shall, by adopting this rule, use from one-sixth to one-eighth as much adhesive as we have used of soft foil.

Next, in regard to the *consistency* of these cylinders. *They must not be too hard.* Operators, unless constantly on their guard, are apt to roll their cylinders too tight, and hence make them too unyielding. They are tempted to do this to facilitate their introduction, when they are to meet with a resistance which would crush them if made softer. But this *spiking* sort of operation will not do. No cavity was ever perfectly filled with *unyielding* cylinders or round rods. These cylinders must be sufficiently soft to adapt themselves readily by lateral pressure to any and every irregularity of the cavity, and when we cannot introduce cylinders of this character into any required place, then is the time to change off for pellets. With *any* cylinders, and

especially in large cavities, it not unfrequently becomes necessary to *alternate with pellets*, in order to secure some point too small to be fully reached by gold in the cylinder form. After a cylinder is carried to its destination and fully packed, I hardly need say that it must never be allowed to stir from its bed. To overcome this difficulty, especially in *large and shallow cavities*, it often becomes necessary to use the left hand as an assistant to the right hand,—the office of the plugger in the left hand being mainly to hold the foil already packed in place, while more foil is being introduced and packed by the plugger in the right hand. There is no difficulty, with a little practice, in thus using the left hand in conjunction with the right hand, even packing with both at the same instant; and I take this occasion to urge all young operators, before their notions and manipulations become stereotyped, to *practice using both hands at the same time*, or at least learn to do so, and thus be ready to meet any emergency that may call for it.

I will now offer some of the reasons which have influenced me to adapt my present method of filling teeth as above described. My first and strongest reason is, that in a particular class of cases *I can reduce my operations to far greater certainty* than by any method which I have hitherto adopted. I refer to approximal and lateral cavities, and especially those occurring in bicuspid and molar teeth. The critical point in filling such cavities is, to fill perfectly (if upper teeth) the upper half or portion of the cavity, so that it may be left with a certainty that this portion of the filling is perfect and that it may be finished flush with the edges of the walls of the cavity. This done, and the lower half or portion is easily managed. But if there is the least imperfection about the upper margin, we never can return to it with any hope of afterward making it perfect. This is one of those bills that admits of no amendments short of striking out the enacting clause. In other words, whenever an operator finds, on examining such a filling, that its upper portion is imperfect, he may as well at once remove the filling and begin it anew.

In such cases I use as my first cylinder, one which, when fully compressed, will fill from one-third to one-half of the cavity, and which is thrust upward against the upper shoulder or wall; meanwhile, when necessary, holding it from any outward thrust by an instrument in the left hand.

After it is fully solidified by direct upward pressure, which is done by a *foot-shaped* instrument, it is then and there held by the plugger in the left hand, while with the right hand we are enabled deliberately to make it more perfect by the use of one or more pellets, or by further packing any compressible portion of the cylinder itself. In short, we now substantially *finish* this portion of the filling, so far as the use of the plugger is concerned. It *must* be so left as to have no further occa-

sion to use the plugger upon it. The operation, after this is accomplished in the manner described, is comparatively simple and easy, and may always be reduced to a certainty.

After the upper portion of the filling is completed, a firm compress of wood, paper, rubber, cloth, or any other material, may be carried up between the teeth, even covering in the main this finished portion of the filling to prevent any moisture from above reaching the part yet to be finished.

In this way we may fill the balance of the cavity with the utmost deliberation and ease, and free from all dread of being flooded before the final blow can be struck. This description applies to all lateral and approximal cavities, and indeed in a great measure to all cavities, wherever situated.

My second reason, and one which with me has great weight, is that, take cavities as they average, the work can be done by this method in one-half the time required to make equally good fillings with pellets alone. We sometimes hear dentists boast of spending a great length of time in performing operations, and perhaps on simple fillings, as if there was some peculiar merit in the fact. Should a surgeon boast of spending *hours* upon an operation which could have been as well and as safely done in as many minutes, no one would regard such an admission, not to say boast, as very much to his credit, and I unhesitatingly accuse any dentist who employs more time than is necessary to complete an operation properly, of wrongfully cheating both himself and his patient out of this valuable commodity—*time.*

Again, no dentist has a right to keep his patient in an uncomfortable, not to say painful, attitude one moment longer than necessity positively demands; and as between methods or processes, other things being *equal,* that system should have the preference which secures equally good operations in the shortest space of time. In saying this, I by no means intend to encourage or *countenance* any curtailment of time that must bring with it any possible shortcoming in the perfection of the operation; but if one system of operating will materially lessen the time, without marring the result, it can but prove a benefactor to both dentist and patient.

This question of time has not only a strong bearing upon the comfort of both parties, but it is of even greater moment when considered as an element of success or failure in performing operations. It not unfrequently occurs that in those cases where the saliva is uncontrollable for any considerable length of time, that the operator is enabled to do the first half of his filling well, and to his entire satisfaction, but fails totally in the last half, and consequently in the whole, by reason of a flood of saliva overtaking him at this point. Now if, by any plan or device, he could have completed his operation "before the flood," he would often avoid such a result, and save himself a panic which unfits

him for operating even with ordinary rapidity and success; and it often occurs where, with ever so dexterous a use of wedges, strings, coffer-dams, napkins, etc., this destroying flood submerges both our operations and our hopes, before we can by any possibility get out of its way.

After a practice of nearly a third of a century, I can truly say that any means calculated to avert, or outrun, the evils arising from that rapid flow of saliva which the dentist in many instances has to contend with, should be hailed with a joyous welcome, as relieving him of more than one-half of all the plagues incident to dental operations. But I have already trespassed upon the ordinary limits of such a communication, and far beyond my own intentions when I began this paper. In some future paper, and possibly for your next number, I will give *the history of plaster impressions for dental purposes*, with some suggestions relative to the manner of manipulating this most useful article to the dentist.

CAPPING EXPOSED PULPS.

BY W. H. TRUEMAN, D.D.S., PHILADELPHIA, PA.

The treatment of exposed pulps, their destruction or preservation, is an open question with our profession which the experiments and experience of many long years have failed to decide. Although the practice of the profession tacitly admits, and a careful examination of the subject will show, that many varied methods of treatment intended to preserve the vitality of pulps actually exposed, sometimes, nay often, promising well, have in the end proved disastrous failures; yet there are a few encouraged by a small number of successful cases who still stem the current of defeat, and with commendable zeal endeavor to coax this unruly spirit within their control.

Any one who will take the trouble to examine the literature of our profession for the last half century, cannot fail to admire the tenacity, perseverance, and energy with which the profession, under severe discouragement, has labored to discover some material and method to accomplish this much-to-be-desired result. Every conceivable preparation which could possibly be appropriated to this use has been tried in various ways, with more or less *apparent* success, but in every case, after a few years' trial, has been found unreliable. Time after time we have been startled, as the discovery of the long-sought "philosopher's stone" has been announced, in about the same words (not quite the same words, but words far shorter, simpler, more easily understood, than those jaw-breaking, brain-racking expressions of a later day), and with the same promises of success with which the oxychloride of zinc has been introduced to our notice.

That it is possible to treat an exposed pulp without destroying its vitality, under *some* circumstances, has been settled beyond question.

Cases have been reported of many years' standing, capped with gold, tin, lead, asbestos, and a variety of other substances, with undoubted permanent success. But these have been the exception, and not the rule; and in all probability the success has been due more to the peculiar constitution of the patient than the efforts of the operator. On this point I have recently met with a singular case. Twelve years ago my preceptor, Dr. H. Winterbottom, while examining the mouth of a patient, a young man aged about eighteen or twenty, found one of the molars badly decayed, the pulp exposed, bleeding when touched with the probe, and advised its extraction, as the patient was about to leave the city. The patient objected, as "the tooth did not trouble him very much," he said, "and when it did he always had a *quid of tobacco* in his mouth (an inveterate chewer), and pushed it in the cavity with his tongue; it always made it easy." Some three years after, while the doctor was examining his mouth again, the patient remarked, "You see, doctor, that old tooth is still there. It never troubles me any now." Upon examination, no opening whatever into the pulp chamber could be found: Nature herself, unaided, except by the nicotine of the tobacco, which no doubt had a tendency to keep the inflammation from becoming excessive, had entirely closed it up. The cavity was cleaned out and an amalgam filling inserted. The patient was heard from a short time ago; the tooth is perfectly comfortable. During the nine years the filling has been in it has given no pain whatever. Such cases as this are very rare; we must recognize them as freaks of nature, or rather a concatenation of propitious circumstances seldom met with, and not as data upon which to base any special mode of treatment. How would it answer to adopt the course here indicated, and the next case of exposed pulp presenting,—for instance, a delicate young lady—recommend the patient to keep a quid of "fine cut" or "honey dew" in her mouth, and when her tooth ached, quiet it down by sticking it in the cavity with her tongue, hoping in a few years nature would throw out a bony deposit and prepare the tooth for filling?

In regard to the oxychloride of zinc, we have little to say; it has not been in use long enough to warrant an opinion. As far as I have examined the subject, it has usually taken three or four years to thoroughly test the value of a preparation for this purpose. Very few, if any, have remained before the profession much longer at one time; some have been used, abandoned, and again brought forward in the same or a modified form several times. The new method (creasote and oxychloride of zinc), for reasons to be presently stated, may take a little longer before its actual value can be known.

There is, however, one point upon which its advocates are strangely silent. When first introduced, some twelve years ago, the operator was especially cautioned not to use it in any case unless there was a

considerable body of dentine between it and the pulp; and a few years after it came into general use a great many cases came to my knowledge where death of the pulp had actually taken place, even where there was sufficient dentine intervening to be considered safe. I also remember in a majority of such cases that the filling had been inserted (it did not always stay) a year or two before the change was noticed, the patient suffering little or no pain; often the formation of an abscess being the first indication of trouble. How is it that this same preparation, a few years ago so dangerous when allowed even to *approach* this delicate organ, should now, when brought into *immediate contact*, be the great panacea for all the ills it is heir to, even restoring it to a healthy condition when far advanced in suppuration? Does the previous application of creasote modify its action? Or has its composition been changed? How is it that I find it a useful agent in obtunding the sensibility of dentine, by inserting a filling and allowing it to remain several months, if it is not still a powerful escharotic? If they have any solid, substantial foundation upon which they rest their faith, we would like to know it. It is not old enough yet to stand on its dignity, and the "ghost" or "spirit" theory is unworthy a moment's serious thought.

And now, to come to the main question. How is it that while we can treat disease in every other organ of the human body with at least comparative success, we should so signally fail in this? Without presuming to give a full and correct answer to this oft-repeated question, I desire to throw out, for what they are worth, a few suggestions upon the subject.

What is the pulp? It is a vascular organ, consisting of blood-vessels and nerves, incased within solid, unyielding, bony walls, and is connected with the general system by delicate vessels and fibres, passing through a minute foramen; and may we not also add that it is enveloped by a serous membrane analogous to that which surrounds the heart, the lungs, the brain, and every other important organ of the body? These serous membranes, we are told by surgeons, are very susceptible to the influence of oxygen, the least exposure to the atmosphere invariably giving rise to severe inflammation, often more difficult to treat and more dangerous to the patient than an injury to the organ it covers. And may not this explain why cases of recent exposure—as by an unfortunate cut of the instrument, where the opening is small and the pulp not wounded, and the capping applied immediately, or where it is not actually exposed, but protected by a thin covering of dentine, even though the dentine be affected by decay—are more successfully treated than where the opening is larger, or the pulp has been wounded so as to bleed, and this delicate membrane punctured? I am not aware that the existence of such a membrane has ever been demonstrated, and have no other ground to suppose its presence than a careful observation of the behavior of this organ upon exposure.

Let us examine the effect produced when the pulp is exposed by the gradual process of decay; avoiding, as far as possible, all abstruse technicalities, which, while they add nothing to the value of an article, often, by confusing the reader, obscure the ideas they are intended to convey. And as an illustration, take a supposable case. An actual observation would of course be more to the point,—but here is one and perhaps the greatest difficulty we have to contend with. We cannot watch the progress of disease as closely as we would like, nor have we any means, by the use of our own senses alone, by which we can tell *exactly* its condition. Much, very much, depends upon the statements of the patient, and we all know they are often very unsatisfactory. From its position it is shielded from observation, and must be examined through a medium so little transparent as to completely hide those signs which in other organs are so important to our judgment. The small portion presenting at the opening is of but little value, as the local effect of either the irritants or remedies to which it is continually exposed would more or less change its appearance. We base our judgment more upon analogy than observation; not so much because we have neglected the latter, as from its absolute impracticability. In most portions of the body the ravages of disease are rapid. The intelligent physician can see, assisted by the eye of faith, the varied symptoms as they appear; can watch, can study them as they change from day to day; can observe and compare the effect of the various remedies he makes use of. He not only thus gains a more accurate knowledge of the disease he combats, and the remedies he commands, but is enabled to more skillfully bring them together. But place the patient, for instance, suffering from inflammatory rheumatism, in an empty beer keg, and let the physician treat the case from the observations he may be able to make through the bung-hole, and he will be in *exactly* the same position as the dentist who attempts to treat a diseased pulp. If he fails, place it not to his discredit,—if he succeeds, his crown of glory will be far brighter.

The diseased action, running through its usual course, by which a pulp is exposed and finally destroyed, may occupy five, ten, or fifteen years from its commencement to its final consummation.

Let us now examine such a case. We will take one of the molars: it has just been erupted, and to all appearance is perfectly sound, without spot or blemish. How nicely it has deceived us; it has, with all things mortal, its imperfection. In a short time, a few months or years, we find that dark lines make their appearance along the fissures of the crown—original defects in the formation of the enamel. They are the *trenches* by which the pulp's enemies work their way to its castle. They go on increasing, very slowly, from day to day, until they have worked their way through the dense, compact layer of enamel, and reached the more destructible dentine beneath. Here they form their first parallel,

and having more room to work, begin to increase their forces; and now the threatened pulp becomes alarmed and telegraphs for assistance. It is not panic-stricken—there is no pain—and yet, *this is the beginning of that inflammatory action which at a later stage we may be called upon to treat.* In obedience to the call we notice a slight increase in its supply of blood, an increased activity among its individual members; they, rather sluggishly at first it is true, as though hardly anticipating danger, begin to strengthen their position. Day by day the activity within and the activity without, among the besieged and the besiegers, increases.

After this has gone on for some time, a microscopical examination of the tooth will show a largely increased number of dentinal tubes blocking up the path of decay, showing that this is not an unfounded fancy sketch, but that there is an actual change in the tooth itself, an effort made to retard the progress of decay, and in some cases so effectually as to completely arrest its progress. But such is not the case with our tooth. The attack goes on, the alarm increases, reinforcements are continually received by both parties, until at last the besiegers have so far completed their preparations that they no longer need the shield which has thus far served to screen them from observation, and begin to cut away its supports. In an unlucky moment the patient, biting "something hard" (this time), crushes it in, and unconsciously gives the signal for the grand attack, which at once begins in earnest. Both parties rush to the contest; destruction and vitality charge and recharge, until the battle-field fairly trembles beneath the tramp of armies, and the unfortunate patient groans with a fearful, raging, "jumping" toothache. In a little while they may become exhausted, and rest, to renew the fight again and again; or vitality, after a brief resistance, may retire to await reinforcements, or retreat ignominiously from the field without a show of resistance. In this contest destruction must triumph, unless science stretches forth her strong hand to drive it back.

Admitting that there is at least a thread of truth running through this story, and that the inflammation we are called upon to treat in a pulp exposed by disease (caries) begins as soon as the decay reaches a portion of the tooth possessing vitality, and that this (inflammation) has gone on gradually increasing until the pain has compelled the patient to seek our advice, a period perhaps of some years,—in what condition is that pulp? Is it not in a state of chronic inflammation? Reasoning from analogy, without going into minutiæ, is it not probable, in a case like this, the abnormal has become the normal, the pulp gradually accommodating itself to the gradual change, until this unhealthy condition has become necessary to its health and well-being?

And now comes the treatment. What does medicine teach us is the effect of suddenly checking an inflammation like this, or any other unhealthy action which has continued a long time, or a violent action of but

short duration? Take, for instance, a violent diarrhœa, which may have continued but a few hours or days: has not the over-anxiety to check this unnatural, unhealthy discharge in many cases lost the patient? Nature will not tolerate these sudden changes. How often do we see the man of business, whose struggle with poverty in early life has developed the energy, perseverance, and industry to insure success, as age advances retire to a life of ease and inactivity, and how soon does the man of hurry and bustle sink into his grave, while his neighbor, who still keeps driving at it, lives on to a good old age!

Now, to throw aside the theory before advanced (we are only throwing out suggestions—food for reflection), do we not see another reason why cases of recent, especially accidental, exposure are more successfully treated than those which have been exposed by disease, and perhaps the difficulty complicated by a thrust of the instrument, as recommended by some? But, you say, we have remedies by which we can reduce this inflammation gradually, if we wish, and thus bring the pulp back to a healthy condition. Without admitting this, suppose we have, and pray tell me how do you know when to cease their application? How can you tell when the pulp is brought back to its normal condition? The absence of pain is no sign; a high degree of inflammation may exist in this organ, sufficient indeed to destroy its vitality, and the patient remain entirely unconscious of it. The remedies you apply may paralyze its nervous system, and thus completely sever its connection with the brain. You cannot see it to observe their action, and may carry their application too far, and so reduce the circulation as to destroy vitality. All men are not favored with "spiritual assistance," but must grope their uncertain way in the dark.

We will now treat this case,—according to direction. The first indication is to remove the cause of irritation. We begin by carefully cleaning out the cavity. And now, what next? If we have not accidentally wounded the pulp so as to make it bleed and relieve it of the pressure, we are told to puncture it with the instrument (very pleasant for the patient). This puncture, however slight, has wounded it; its substance has been lacerated; its delicate vessels have been ruptured, and those fine nerve fibres which we are led to suppose permeate every part of this tissue on their way to the dentine, are torn asunder. This necessitates a process of repair,—there are some portions which *will* die, and must be thrown out in the form of pus, or removed by the absorbents. This pulp has been—is now—inflamed; that is, there has been an unnatural determination of blood to the part; a portion of that blood has been in a state of unnatural activity, and a portion in a state of partial stagnation. In consequence, those vessels designed to convey a certain amount of blood, all in motion, have been enlarged. The propelling and suction power of the heart, in this distant part of the system, is feeble; the circulation depends in a great measure upon the

elasticity of the vessels. We have punctured them, and allowed a portion of their contents to escape; they are therefore flaccid, and the entire column of blood has a tendency to stagnate, and this stagnation favors decomposition or suppuration. We now apply a liberal dose of creasote. This at once paralyzes all the nerve fibres it comes in contact with (the pain ceases), unites with the albumen of the blood, and plugs up the orifices of the ruptured vessels, and, as an astringent, causes them to contract and make an effort to start the column of blood. Thus far well and good. But it has also, as an escharotic, destroyed a portion of the tissue it has come in contact with; it has taken it from the vital forces and handed it over to the chemical; it has introduced an enemy in the camp. If, as an antiseptic, it keep guard over this enemy, and holds him as a prisoner of war, all is right; if not, all is wrong. The soldiers of vitality, or at least a portion of them, demoralized by defeat, unable to remain idle, spoiling for a fight, only wait a leader to join friend or foe,—*i.e.* the blood, unable to escape to the zone of active circulation by reason of the general stagnation, is prone to decomposition. The presence of a single degenerate pus corpuscle more than the absorbents can take care of, by a physiological action analogous to catalysis of the chemist, may start that process of separation which sooner or later will end in an abscess.

We now carefully remove the excess of creasote, and having hastily mixed our oxychloride quite thin, gently flow it over the point of exposure, being careful to avoid any pressure. In a few moments, when the first application is partially set, we add sufficient to fill, or partially fill, the cavity, and, instructing the patient to "grin and bear" any pain he may experience, dismiss him with the assurance it will "feel good" after awhile.

Let us examine, for a few moments, the preparation we have been using. It consists of the chloride of zinc, a powerful escharotic (and as such was frequently made use of, before the advent of arsenic, to destroy the very organs it is now used to preserve), and also a powerful antiseptic. These properties are very much tamed down by the mixture with the oxide of the same metal, a comparatively inert substance. In the laboratory of the chemist it is possible they might be so combined as to form a neutral compound, but in practice, however carefully we may apportion them, there is always a large excess of the chloride, and when used as directed this is much increased. What is the effect of this escharotic inclosed between the cap and the pulp? Precisely analogous to that of the creasote, but in a more marked degree, and more lasting in its effect, and far more dangerous to the well-being of the pulp, for this not only destroys diseased but is also a powerful irritant to healthy tissue. We have in the person of this active agent introduced another enemy into the camp, and unless there is a remarkable linking together of favorable circumstances, a healthy constitution,

healthy surroundings, and an entire absence of all local irritation, little by little, cell by cell, the pulp will gradually lose its vitality, each atom, as it is deserted by the vital principle and resolved into a chemical compound, being seized by the antiseptic present; the change going on slowly, quietly, without any noticeable irritation, until the antiseptic is exhausted, when the change becomes more rapid. Or, it is possible the pulp may die and remain *in situ* for a long time—for years—and cause no special trouble. I have met with several cases where, upon opening into the cavity, it has been perfectly clean and dry, or occupied by a mummified pulp—cases that had evidently been in this condition some time, and had never given the patient a moment's pain, requiring a very close examination to arouse even a suspicion of their true condition. In one case especially, the only sign I had of anything wrong was the absence of sensation in a cavity that ought to have been sensitive. The mere fact of the tooth being easy and comfortable is only *presumptive evidence* of its being in a healthy condition. There may be a smouldering fire within, waiting only a little local irritation to fan it into a flame.

In conclusion, allow me again to call attention to the importance of patiently waiting a long time before announcing the success of experiments in this direction. While writing this page a patient called to have a tooth examined filled four years ago, and on removing the filling I found, as the patient had before told me, that the pulp had been exposed and had been capped with a small piece of silver plate, covered on the lower side with Hill's stopping or gutta-percha—the pulp dead, and suppuration far advanced. In this case the tooth was tender, giving pain upon pressure for a few months, when it became easy, and has so remained until within a short time. The case reported by me, with the specimen, at a recent meeting of the Odontographic Society, is another illustration. Wait until five or ten years have established the truth of the doctrines you teach before pronouncing the dentist either "weak or wicked" who purposely destroys a diseased pulp.

HEREDITARY TRANSMISSION OF DENTAL IRREGULARITIES.

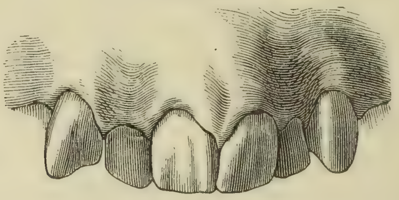
BY J. H. M'QUILLEN, M.D., D.D.S.,
PROFESSOR OF PHYSIOLOGY IN PHILADELPHIA DENTAL COLLEGE.

Continued from page 29.

In another family the mother has the superior lateral incisors standing within the dental arch; the right lateral being so far back as to close behind the lower incisors when the jaws are shut. An effort was made to correct this defect, when about seventeen years of age, but owing to incompetence on the part of the operator, or impatience on the part of the patient, the attempt proved unsuccessful.

The eldest daughter of this lady, when fourteen years of age, had the superior lateral incisors occupying the same position in the dental arch as in the mother's mouth, while the canines of each side were so markedly prominent as to resemble tusks, and proved not only unsightly when the mouth was open, but in addition a source of great inconvenience in the movements of the upper lip (Fig. 3). The canines of the

Fig. 3.



mother had been quite prominent at the same age; owing to the efforts of nature rather than the dentist, these now occupy correct positions.

After an expenditure of considerable time, labor, and patience on the part of the operator and patient, due to the dense and at first apparent unyielding character of the alveoli, the young lady's teeth were brought into, and now remain in their proper position, much to the satisfaction, indeed unbounded gratification, of the parents, particularly the mother, who had begun to despair of a successful result. It was one of those cases in which the practitioner, owing to the necessarily prolonged treatment, finds not only the patience of the patient giving way ever and anon, but recognizes in addition the absence of that moral support on the part of the parent which is so important in encouraging a child to persevere in efforts which, if successful, must prove of marked advantage. The want of this encouragement no doubt has been often felt by every practitioner of extended experience, and has frequently led to the abandonment of cases when just on the eve of successful consummation.

In the treatment of this case, the left upper first bicuspid was extracted, and india-rubber rings were then passed around the necks of each lateral incisor, over the labial surface of the canines, and secured by silk ligature to the first molar of each side. These were renewed every other day for some time, and resulted in bringing the canines almost into their proper positions. Very little, if any, change, however, was effected in the right lateral incisor. It appeared to be firmly and immovably fixed in the maxilla. In addition to this, every time the jaws were closed, the occlusion of the teeth tended to keep the tooth in its false position. A silver bar, similar to that described in the preceding part of this communication (page 29, January number of the Dental Cosmos), was now made, and the india-rubber rings passed over it, and around the right and left lateral incisors. At the same time an inclined plane of hard rubber was constructed to fit upon the lower front teeth and strike inside of the upper laterals when the jaws were closed. With

this arrangement, which the patient could readily adjust, the desired result was obtained. It was only gained, however, by carrying the patient through the trying ordeal, in the most determined manner on my part. It may not be amiss to state that, in cases where the alveoli are so firm and apparently unyielding, satisfactory and permanent results can only be secured by slow and gradual efforts, depending, to a certain extent, on the assistance afforded by nature in the growth and expansion of the jaws. After the teeth have been brought into their proper position, it is necessary that they should be *maintained* there for some time by ligatures, or they will fall back into the old places again.

The next daughter of this lady, nine years of age, had the superior lateral incisors slightly within the arch. This defect was readily corrected with the silver bar, rings, and inclined plane referred to.

There are several other cases which have come under my observation and care of a similar character to those cited; but passing over these, I would now invite attention to a most interesting and peculiar series of cases illustrative, in a most marked degree, of the hereditary transmission of dental irregularities.

Of these, a gentleman who kindly consented to have an impression taken of his mouth to illustrate this article, as will be seen by the accompanying engraving (Fig 4), has never had any upper lateral incisors. He states that his father was also deficient in these teeth.

Fig. 4.

Fig. 5.

In the eldest son of this gentleman, aged nineteen, an attempt has been made on the part of nature to supply the deficiency manifested in the grandfather and father. The effort, however, as will be observed in the engraving (Fig. 5), drawn from a model of his mouth, has only been partially successful, as the lateral incisors are quite diminutive in size.

An elder brother of this gentleman, who has several children, had dwarfed upper lateral incisors, which were extracted along with the centrals, when a young man. The eldest son of the brother, aged twenty-one, has the lateral incisors dwarfed, while in a younger son, aged fourteen, the upper laterals are absent, as in the case of the grandfather and uncle; a daughter, aged eleven, has dwarfed laterals.

(To be continued.)

DEVELOPMENT OF CELLS OF THE DENTINAL PULP INTO TUBULI.

BY THOS. C. STELLWAGEN, M.D., D.D.S.,

PROFESSOR OF HISTOLOGY AND OPERATIVE DENTISTRY IN PHILADELPHIA DENTAL COLLEGE.

In a recent work* there occurs the following paragraph:

"Why this secretion, in its organization, should assume the position of the elongated tubular cells which pertain to the structure of dentine, I have, of course, no idea; and it is quite enough for our purpose to say that it is a law of life perhaps never to be comprehended this side of eternity, and the discovery of which would, at any rate, have but little practical signification to us."

With the author I must agree that the *cause* of the phenomenon of some cells forming tubes, while others of similar appearance are developed into intertubular structure, in our present state of information, must be attributed to the imperfectly comprehended vital force, emanating from, guided and presided over by the Creator himself.

The *effect* of this tubular arrangement within the structure of the dentine is a matter which not only seems to be deeply interesting to those who study dentistry as an art, but to that other class who are devoted to it as a science.

Two reasons have long been given for this tubular condition, that seem to be well received, namely: the transmission of nutrient fluid, or the lodgment of nerve filaments, or both. These we see in the works of all writers upon the subject; but an equally if not more important reason than either has been touched upon, which, although it has existed quite as long and is no less plain than these, seems to be neglected, and remains almost unconsidered.†

The opponents of the doctrine of nerve filaments claim that hydrostatic pressure upon the pulp from the fluid in the tubuli, the waves sent along these channels, and the transmission of vibratile motions by the solid substance, would all account for the peculiar sensations of dentine, thus apparently rendering these filaments unnecessary. By Prof. McQuillen it is urged that if the pulp had such an infinite number of connections with the tubuli, it would be held firmly in position, and could no more be drawn out of its cavity than Gulliver could stand up when first he found himself bound by the Liliputians.‡

To these arguments I think might be added the effect of osmosis on the pulp through the tooth, and reflex action through the nerve; the former, as shown by the two currents between fluids of different densi-

---

* A Treatise on the Diseases and Surgery of the Mouth, Jaws, and Associate Parts. By Jas. E. Garretson, M.D., D.D.S. Philadelphia: J. B. Lippincott & Co., 1869.

† "A Course of Lectures on Dental Physiology and Surgery." By John Tomes, Surgeon Dentist to the Middlesex Hospital, etc. London, 1848.

‡ See Dental Cosmos for October, 1869, page 524.

ties through organized material, and the latter, by the familiar effects of sapid substances, as vinegar, etc., upon the salivary glands.

On the other hand, the advocates of this doctrine claim that they have found fibres occupying these canals, which would be very conclusive if their opponents did not have the theory of coagulated fibrine to fall back upon. Some say that there are no changes in dentine once formed, but this is untenable; every midwife knows that a pregnant or nursing woman frequently finds her teeth suffering from softening of the tissues. Finally, others claim that there is not abrasion, or wear of dentine, and that it needs no nourishment. From a review of the above one might almost be persuaded that there is some chance that the dentinal tubuli are of very limited use and could be dispensed with altogether. Nature, however, has good and weighty reasons for forming this tissue after so uniform a pattern, and, if we search, no doubt others yet unthought of will some day be understood by all.

The architect has long since learned the lesson, which the economy of nature has taught by the hollow tubes of the long bones, woody fibres, etc., that this is the type form for the greatest strength with the smallest amount of material and weight.

The teeth are models of strength, beauty, and perfect adaptation of means to ends; it is no wonder, then, that nature should have brought into play her favorite style of development, destined as they are to sustain heavy pressure and severe shocks, while at the same time durability and lightness are so essential to their successful employment for the welfare and comfort of the individual.

The central cavity of the tooth, as we all know, is filled by a pulpous mass, which greatly reduces the weight, and, from the tubular shape, but slightly affects the power of resistance offered by the organ; radiating and branching in all directions from this are the dentinal tubuli, whose curvatures would seem to admit of their acting as tough and springy supports of the whole tooth, like the tubes of a boiler, or supporting the enamel as the hollow columns of a building do the roof; the whole, bound together into a solid by the intertubular tissue, being an illustration of the axiom—"In union there is strength."

These tubes are more numerous and closely packed, as well as curved, in the permanent than the deciduous teeth, and in both in the portion of dentine under the masticating surface, and such points as receive the impact of the shocks and lie in line of the greatest pressure. Thus it would seem to be arranged with the view of being most tenacious and least liable to transmit painful jarrings to the nerves from these points.

Like the military engineer, who covers his fort with fascines, bales of cotton, hay, etc. to protect the soldiers in the bomb-proof, so nature would seem to guard her tissues of the tooth pulp. The whole is coated by a plating of the most resisting material which is in the storehouse of the animal economy, the capped or conical formation of which

seems to be calculated to condense or bind together the structure below in proportion as it is pressed upon, as the hoops do the staves of a barrel.

PRESERVATION OF THE TEETH.

BY H. NICHOLS WADSWORTH, D.D.S., WASHINGTON, D. C.

Only the prostration resulting from an attack of nervous fever prevented me, some months since, from avowing my firm belief in the soundness and enlightened views advanced by Dr. Robert Arthur, for a more perfect and successful preservation of the teeth intrusted to us by the confiding public, through a more general *anticipation and prevention* of disease, where our experience has convinced us it must inevitably follow. The propositions advanced by Dr. Arthur, in their general character, are, in my opinion, sound and uncontrovertible; they are calculated, when acted upon by discriminating, honest, and skillful practitioners, to *greatly* increase the per cent. of successful practice; to decrease the expense to our patrons; and, what in my mind is a far greater pleasure than either, afford the satisfaction to our own hearts which is engendered by success.

Twenty odd years of zealous, hearty labor in my profession, with a critical observation of the results of other practitioners of known and acknowledged skill, has demonstrated, beyond controverting, the large number of failures in a few years after performance of approximal fillings. The honest, conscientious in our profession will, I think, acknowledge its truth. If, then, this be true, is it not better for us to adopt some method by which we can decrease the number of unsuccessful operations, and increase those that are successful?

Please to remember, I am not urging this method of practice upon the student and tyro in our profession, but upon the skillful and experienced practitioner,—upon him who knows *when, where, and how* to extract, to separate, and to stop or fill

Where is the practitioner of ten years' standing that can deny the assertion that, on an average, three out of four of all his patients have lost more or less of their bicuspid teeth—probably four of them? If this is a true average, why should we not then sacrifice four of these teeth early in life, when by doing so we obtain room for an expansion of all the other teeth, in a great measure relieving the crowded condition occasioned by the eruption of the second molars (second dentition), and which is greatly increased by the eruption of the third molars or dens sapientiæ? If this does not suffice, but evidences of decay begin to show themselves on the approximal surfaces, then the judicious, careful application of Dr. Arthur's suggestions are wise and prudent, and the day I believe is not distant when the profession, rising above prejudice and self-interest, will acknowledge the efficacy of such a course

of operating; present it to their patients, explain its utility, and firmly and respectfully urge its adoption.

I am well aware what a handle is given the unscrupulous operator in advancing these sentiments. I am well aware of the prejudice existing in the minds of a large class of our patients against the use of the file (as they all understand a separation); but my impression is, that he who has honestly and skillfully practiced our profession for a number of years, must have obtained a sufficient control over his patients to be able easily to convince them that his advice is for their permanent good, and gain their consent to submit to his experience and skill.

A case came under my observation several years ago bearing upon this point of separating the teeth, which I will relate:

A gentleman for whom I was operating asked my opinion of his front teeth. My answer was, "They have been pretty severely filed." "Yes," he replied, "and I did it myself. Twenty-two years ago my front teeth were very badly decayed. I went to one of the most celebrated dentists in Philadelphia to have them filled. To my horror and disgust, he said, 'They are too far gone to fill and savè. I would advise you to let them alone, and when they commence paining have them extracted and artificial ones substituted.' I went down into Market Street, and purchasing a broad, flat file, I went home, placed myself in front of a glass, and, though it hurt almost beyond expression or bearing, filed a broad space between each of my front teeth."

The spaces were enormous, but every tooth was in its place, and likely to remain; the decayed portions yet remained by slight concavities, and others by discolored but not entirely decomposed bone.

Who among us cannot look over the mouths of many of his patients and find many, many elegant teeth that have been saved, and still presenting the beautiful polished surface of a separation and erasure,—and that done years ago?

The utmost *skill* and *judgment* are demanded in adopting this mode of operating. The countenance of the *best*, the *wisest*, the most honest in our profession is necessary to bring it into general practice, for I can anticipate, and have already seen in our own local society with what opposition it will be met; yet,—

"Truth, crushed to earth, shall rise again;
The eternal years of God are hers;
But Error, wounded, writhes in pain,
And dies among its worshippers!"

I am proud to announce myself as having long held nearly the same opinion with Dr. Arthur, as to the propriety of adopting more of a preventive system in our operations; and I have taken the first opportunity in my power to express myself in its favor, and to assist him in his conscientious and honest efforts to advance our profession in science and usefulness.

WHAT MAKES A GOLD FILLING STAY IN?

BY J. T. CODMAN, BOSTON, MASS.

The superficial answers to the question as to what makes a filling stay in a tooth, given by the members of our profession, are those which would provoke a smile, were it not that they should be treated in a more serious manner by all those who have the best interests of our profession at heart, and who desire its improvement. How often is the question asked by patients, and how often you and I have foolishly answered it.

Every member of our profession can answer the question off-hand, and there is not one who would not feel himself insulted if he was charged with not knowing the true answer to it; but if in a quiet way you ask a professional brother, ten to one if he can answer the question rightly without considerable thought. I am led to these suggestions by the *practical* answer given to this question by many of our operators who are supposed to be high in theory and practice, but whose doctrines seem to me to prove that they have not fully comprehended what lies at the very base of successful filling.

How important it is for operator and patient that this subject should be comprehended in order to save the many aimless attempts, the fruitless hours of labor, the disappointments, the regrets, the apologies, the distrust of one's own self, and the weariness and vexation of spirit on one side, and the irritation of nerve and perhaps—how seldom—the sympathy and regret divided with you on the other!

When, after your heart has been gladdened by a brilliant achievement, and success, the joy of labor, has come, and the ledger's page shines with an extra large "charge," approximating somewhat to unusual wear and tear of body and nerve—ere the extra tension has been wholly distributed over the intervening days, Madam Blank drops in, radiant in silk and fine linen, from her morning calls with, "*That* filling has come out." What! can it be believed, *that* one! Mentally you affirm you can never, never, fill it again.

Do you accept such episodes as *accidents* and remain belittled? or are they whips and spurs that smart and sting,—in spite of the coat of mail you adroitly wear, and the pleasant word that parries the thrust, much more deadly than the smiter thinks,—to arouse you to new reflections and study?

But to return to my question, What makes a filling stay in? Why, the "shape of the cavity," is the ready answer of half of the profession. Make the cavity of the right shape, say a trifle larger inside than out, and the filling will not come out. But, my friend, have you not seen fillings out of well-shaped cavities? Yes. Then it is *not* the *shape* of the cavity that makes the filling stay in. It was because the gold was not packed right,—the pieces in non-adhesive filling must wedge one another, —and one got displaced and let out all the others.

If the pieces are arranged right, that makes a filling stay in, does it?

Yes—no—they must be *sufficiently condensed.* I don't fill in that way now. I use adhesive gold altogether. It makes a very hard filling, —splendid finish. I use a mallet, and drive it home *solid.*

So, making a filling *solid* is what makes it stay in, is it?

Well, as you have questioned me, and caught me on my answers, I think—yes—that is it. It's making a filling solid that makes it stay in. I'll stick to that.

My friend, I think you are just where a portion of the progressive men of our profession are, working hard to make solid fillings, with the idea that that is the perfection of dentistry; but did you never see some of the most solid, substantial-looking fillings in the "old gold" box of your confidential friend, wonderful contours and corners, once so beautiful, now looking like the gilded fragments of the buttons of some general of the home guard?

Yes, you are right; I can put in a filling better than I can tell you what makes it stay. But we do better now with our adhesive foil than we used to in old times.

You may do better than the average did in old times, but have you not seen fillings made of plain foil, not handsome, of ten, twenty, and thirty years' duration, that were put in with much less labor and expense than your adhesive ones? What made them do well?

It was the expansion of the gold when it was crowded into the cavity.

Not exactly, my friend; gold don't *expand* when *condensed* in a cavity. But I see you are befogged, and so we will ask our scientific friend. He says it is the gomphosis, which is from a Greek word signifying a nail, which makes the filling stay in.

The teeth are said to be united with their sockets by the articulation called gomphosis, or, as we are led to infer, to stick in as nails do in a board. We know not whether the ancient Greeks clinched their nails, but take it as a fair illustration, and also as showing the relation of filling to tooth. The filling should be nailed in.

It is not to be supposed that the Greeks thought the teeth were driven into the jaws as nails under a hammer, but the relation of teeth to jaw is analogous. Let us examine that relation. What makes a nail stay in a board? Because the nail is to a greater or less extent larger than the hole into which it is driven,—that is, if the nail is carefully removed from the hole it cannot be replaced without force, or in other words, the hole must be enlarged to admit the nail.

The teeth are formed, as we know, gradually, and the jaw forms to them, approaching nearer and nearer, tightening, hardening, and perhaps contracting around the teeth, until they are held nearly in the same relation of board and nail. With a filling, the cavity or tooth bears the relation of socket or board, but unlike socket or board, it is quite unyielding, and the relation is reversed or divided, for it is to be presumed that cavities yield

some under the pressure or blows given in gold filling. But nail and tooth as a whole are unyielding, and here is where the dentist has an advantage, for he can manufacture inside the hole a nail or filling larger than the hole or cavity, and thus produce the relation of gomphosis, and so we answer the question as to what makes a filling stay in. *It is because the filling, by its relation, is larger than the cavity filled.* And this brings me to the practical point of saying unhesitatingly, that the hard, unyielding gold foil, made more so by heating red hot in a flame, used and recommended by a number of writers on dentistry of the present day, is by no means the best condition of substance for filling teeth, and will sooner or later be discarded by them. If you ask me what is the best substance for filling teeth, my answer will be that I do not know; but *pure* gold foil answers well. Adhesive or non-adhesive? I answer, pure gold is always adhesive as long as it is clean. But do not imagine that you are using *pure* gold. Very little of our foil is absolutely pure, and ere long we shall find our reputations are in the gold-beater's hands. Pure foil unites very easily. It needs but a light blow and no annealing until time has defaced its original purity of surface, and then a slight warmth restores it by destroying the accumulations, whatever they are, on its surface, and perhaps reorganizes the conditions of adhesion.

When gold contains alloy, *i.e.* is impure, as it often is, it requires more heat to bring out adhesiveness, and it is lost soon, and the foil is hard to work. When pure gold is carried to a red or white heat in the roll, it become also *practically* hard, though soft in individual particles. These conditions are the worst to produce the gomphosis, for the gold unites on the surfaces, making arches—it rolls into balls; in fact, it unites too readily, and the gold must be beaten hard, for every blow contracts it past the point of normal adhesion, practically manufactured into a gold nugget or plate, and then beaten until it stretches out as an ingot in the rolling-mill. How it dislikes to accommodate itself to the new condition, and how *blue* it looks there after awhile!

Friends, put away those enormous hammers—don't beat your best friend so hard—coax him gently down to where you want him, and he will stick closer than a brother.

DENTAL ASSOCIATIONS.

BY CHAS. E. FRANCIS, D.D.S., NEW YORK.

Within the last decade of years numerous dental societies have sprung into existence with an almost magical bound. They exist in nearly every State and city of any importance in the Union. They have appeared beyond our territorial borders on this continent; and away across the broad Atlantic they are multiplying in numbers, as the large cities of Europe can testify. Prior to 1859 there were very few

dental societies in the United States; perhaps none outside, or but one or two at most; now their name is "legion."

The American Dental Association was organized at the period just stated, and its influence has pervaded every part of our land; indeed, its sphere of usefulness has no limit within the bounds of civilization. It is needless to state that dental associations have been productive of great good to the profession. They have been of *incalculable* benefit, not to the profession only, but to the world at large. This everybody *ought* to know, but surprising as it may seem, there are some people so stupid or stubborn that they are unwilling to admit this fact. None are so blind as they who will *not* see, and this characteristic too often crops out in the human family.

Through the teachings of societies, dentistry has advanced wonderfully within a brief period of time. Through their influence, colleges have been established and maintained. They have infused a new spirit into members of our profession, urging them to strive for higher attainments and for greater usefulness. In concert assembled, members of the various associations discuss all matters relating to their practice, and compare the results of individual experience. They are the *nuclei* of professional and social intercourse. There suggestions are presented, theories propounded, speculations debated, and opinions advanced on the mutual aid plan, where each gives freely of the fruits of a labored experience, that all may partake largely from the rich and bountiful repast.

No one, of course, supposes that every member of an organized association is an active worker, for dentists are not different from the rest of mankind in this respect. There are always two classes of members, the *active* and *passive*, or "workers" and "drones."

There is a difference even in the latter class, for some are more willing than able to do, while others are unwilling to work whether able or not. It is well for both classes to come into our associations, for they derive benefit at no extra cost on the part of others. They assist in contributing to the financial support of societies, and are sometimes converted into useful workers.

Useful as associations have been, few, if any, have done all they might have done for the benefit of their members or for the communities wherein they exist. Few of their members have severely taxed their energies to support and keep them in working order. Some have labored with a degree of assiduity, but even they might have done more. There is a broad field of usefulness still in the foreground. If the members of each society would work together with a will—labor patiently and harmoniously with a truly fraternal spirit—the influence they could command and the usefulness that might accrue from their united efforts could hardly be estimated or conceived.

In society gatherings, all petty bickerings and professional jealousies should be put aside. Offensive personalities should never be indulged

in. Higher aims and better motives should govern each head and heart. To give and to receive instruction, with generous hearts and appreciative minds, is the grand foundation for a successful dental society. In union there is strength and a great degree of safety. A "profession" of isolated beings is imbecile, is insignificant. It has no position, it commands no respect. It can claim no rights, or possesses no power to maintain them. It plods its way through darkness with a scarcely perceptible progress. But gather together the isolated units, and what a force is secured! A snowflake is a tiny atom so delicate as to melt at the touch of one's finger, yet an aggregation of these minute feathery atoms has formed a barrier that defied the mighty efforts of the powerful steam-engine while dashing along its track of iron with a seemingly irresistible fury! So, well organized societies are the bulwarks of strength to a profession, as well as ever-flowing sources of instruction and profit. They should, therefore, be supported and encouraged by all good dentists.

If properly conducted, society meetings may be exceedingly interesting and attractive; but to be such they need some definite and decided system of action. For the want of this many societies, that were organized with a great display of enthusiasm, have gradually lost their element of zeal, and some have apparently faded into oblivion. Now, why is this? Let us consider—in the first place, that too much time is uselessly spent in our professional gatherings. Various matters, of little or no importance, are too often introduced and discussed until the best part of a session is hopelessly lost. Indeed, I have attended meetings where entire evenings were consumed with confused arguments that to a majority of hearers were not of the slightest interest whatever, and much to the disappointment of many who had anticipated a more profitable time in listening to, or participating in, discussions on subjects previously announced, but not even introduced on these occasions. They who leave their cheerful family circles, and go oftentimes a great distance, to attend society meetings, are not willing to spend their coveted time in listening to futile bickerings. This has undoubtedly been a serious cause for the decline of many associations. The trouble should be obviated, and may be done by having an executive committee to whom might be referred all matters of a business character, and receive their sanction before being introduced at any regular meeting. This committee should act as chief engineers, and see that the machinery of the society is kept in the best possible order. Societies are often ruined by opening their doors too wide. A thimbleful of ink will injure a gallon of wine; so one or two evil spirits in a society may render themselves so odious as to drive all good men out.

Meetings often lack life. Much like an assembly of "Friends" do members sit and wait for the spirit to move them. At every meeting there should be one or more essays upon each subject for consideration.

These at once enliven the occasion and call out latent ideas for ready expression.

By economizing time, part of each session might be devoted to giving clinics, relating incidents of office practice, making inquiries, asking counsel, exhibiting specimens of interest to dentists, etc.

To get an extra amount of work from members, it is well to divide up a society into committees. Let a suitable number of well-chosen members be put on each, and have them report at stated periods whatever is interesting in their several departments. Committees are often remiss, negligent, or dilatory; but if the presiding officer is true to his duty, he will not hesitate to remind them of their shortcomings.

Members are sometimes at a loss to find questions for their discussions, and much time is lost in consequence. By appointing a special committee to select subjects for each session this difficulty may be remedied.

Various other suggestions might be given for furthering the interest of societies, but only one more will be noticed here. It is to appoint corresponding members from different parts of the country, and urge them to occasionally send communications on professional or local matters. One or two of these read at each meeting might be interesting and profitable, besides cultivating friendly relations in other localities.

To sum up, let every worthy dentist be a member of some organized association, and be willing to contribute something to keep up its interest. He should be willing to make a little sacrifice where so much is to be gained for himself and his profession.

CONTROLLING THE MUCOUS SECRETION AND SLIGHT HEMORRHAGE DURING FILLING.

BY E. H. NEALL, D.D.S., PHILADELPHIA, PA.

It has long since passed into a proverb that "life is the sum of little things," some apparently so trivial that they are unnoticed; yet each may be said to have its influence for good or ill. Among those that exert a beneficial influence I would desire to class the following:

Having had considerable annoyance during the filling of difficult approximal cavities, from slight hemorrhage and mucous secretion, especially in cases where the gums were inflamed, or from the motion of loose teeth, or from accidentally wounding the gum with the file or other instrument, I have been enabled to control it instantly by simply tearing off small pieces of soft spunk with the foil carrier, and forcing them, piece after piece, with a flat-pointed plugger, well up under the margin of the gum, around the neck of the tooth, sometimes even including the adjoining teeth.

In cases where it is impossible to apply the orange-wood wedge, rubber dam, or rubber rings, owing to loss of adjoining teeth, or peculiar

shape of the tooth to be operated upon, this will be found to be very useful.

Spunk seems to be specially adapted to this purpose by its peculiar compressible nature, it not only closing the mucous ducts and capillary vessels, but also being somewhat elastic, remaining in position, thereby giving a fair view of the cervical edge of the cavity.

The pain to the patient is not near so great as when arranging an ordinary wedge of wood.

Dentists alone know the difficulty as well as the necessity of keeping such cavities thoroughly dry, and many may have tried this method of using spunk; if so, they no doubt recognize its value, and I feel satisfied that, if others try it, they will profit thereby.

MISCELLANY.

ABSTRACTS AND SELECTIONS.*

BY J. W. WHITE.

Canada Journal of Dental Science.

Dr. Beers recommends fine rubber tubing as a comfortable covering for the handles of steel excavators, pluggers, and other instruments, and the wearing of a half glove or mit—the fingers cut away a little below the knuckles—to avoid irritation of the palm of the hand and the fingers from the cross-cut handles of forceps when extracting a large number of difficult teeth at one sitting.

The Dental Association of the Province of Quebec unanimously resolved to abolish the use of show-cases after March 30, 1870. The following resolution was offered at a meeting of the Board of Examiners of the Association:

Resolved, That the license of this Board be not granted to any applicant exhibiting show-cases and other such unprofessional means of attracting attention, or making use of quack advertisements; and that any licentiate infringing this rule shall, on proof, have his license canceled.

The Seventh and Eighth Districts Dental Association met in Buffalo, Oct. 5. The first subject for discussion was "The Proper Preparation of Gold for Dental Purposes."

Dr. Barrett said that "one reason for annealing gold is, that it partially destroys cohesion, and drives the particles of gold farther apart, permitting a more intimate interlacing of its particles. It also so alters the molecular arrangement or polarity of its particles as to permit a closer approximation of them to each other. But, contrary to the general rule that annealing makes metals softer and more

* These "Abstracts and Selections" were in type for the January number, but were crowded out.

pliable, it sometimes makes gold harder, harsher, and more impracticable. This is owing to too much handling and overheating. We know that continued hammering will change the molecular arrangement of particles of iron in a mass, as for instance car wheels. It makes them hard and brittle. Gold in sheets is so much more susceptible to this, that handling affects it. Then, too, two or more thicknesses in the roll stick together, making a lump. In practice uses soft foil, and anneals it in an annealing tray, and uses it in the form of pellets. Heats it above the temperature of the breath, to avoid condensation of moisture on the surface."

Dr. Snow thought the welding properties of gold were in its cohesive attraction.

Dr. Beattie could see no difference in the working of gold, whether annealed to a white heat or only warmed sufficiently to drive off the moisture from its surface.

Dr. Oliver thought that, in rolling gold into sheets, the particles arrange themselves on a line with the force applied.

Dr. Southwick uses Nos. 2 and 3 foil, and anneals not quite to a red heat, and uses from an annealing pan.

The next subject for discussion was "Continuous Gum."

Dr. Bristol thought no work equal to it when well done; but in his hands every piece has been porous, and with all his care can hardly ever avoid its shrinking; and it takes so long to make a perfect set of teeth with it that he has abandoned its use; believes that the secretions of the mouth act upon the material. In view of the great difference in the quality of different parcels of gum, he would advise those who used it, if they ever succeeded in getting any that answered well, to secure the whole of that lot.

Dr. Gifford thought it as durable as any kind of work, except perhaps gold, and the most beautiful of all; has seen several sets which have been worn for eight or ten years. It requires a skillful and practiced eye to tell when the baking has reached the proper stage, and great care to prevent too sudden cooling when taken from the muffle.

Dr. Whitney had found Hunter's gum almost invariably porous and easily broken; had used Allen's formula with much better success.

Dr. Oliver thought there were so many contingencies in its use that he did not esteem it worth a rush for popular dentistry.

Dr. Daboll had seen many cases which answered the purposes of mastication and enunciation thoroughly, while some which appeared to be as well made as the others, only lasted for a short time.

Dr. Danforth thought one great cause of the breaking of sets of continuous gum was its inelasticity—not adapting itself to changes in the alveolus from absorption.

"Anæsthesia, its Effects upon the Blood," was the subject of an essay by Dr. Whitney.

In the discussion which followed, Drs. Barrett and Walter stated that they never gave anæsthetics during the catamenial flow.

Dr. Danforth never makes any inquiry with regard to the catamenia; has given ether for twenty years; takes a common glass tumbler and makes it quite hot; then places it in a paper funnel, so prepared that it can be placed over the mouth of the patient; puts a piece of sponge in the tumbler, and pours ether enough on to thoroughly saturate it; places the funnel over the mouth, and directs the patient to inhale through the mouth and exhale through the nose.

Dr. Leach prefers chloroform; thinks it should be given slowly to insure safety.

Dr. Requa thought the best effects are produced by giving the anæsthetic rapidly,—particularly nitrous oxide.

Dr. Daboll thought some of the fatal cases were caused by the fainting of the patient.

Dr. Rathbun thought patients were liable to the sinking or fainting sensations from taking an anæsthetic on a full stomach.

Dr. Snow was always careful to allow plenty of air with the anæsthetic, and to give it slowly.

Dr. French thought impurity of material was one of the most common causes of unpleasant results from anæsthetics; has had excellent results from a mixture of three parts of chloroform to two of ether and one of alcohol.

Dr. Whitney thought the sinking sensation arose from the lack of a sufficient amount of stimulation from the blood to the brain; thought hysterical symptoms were likely to follow when anæsthetics are given to females during the catamenia.

The next subject for discussion was "Filling over Exposed Pulps, and how to do it successfully."

Dr. Daboll did not think it possible to save a nerve after congestion had supervened.

Dr. Leach, in treating such cases, removes the decay as much as possible from the walls of the cavity, but leaves the softened dentine immediately over the nerve undisturbed, and fills with os-artificiel; endeavors to save every nerve alive, if possible.

Dr. Requa would not attempt to preserve the nerve in an incisor after it has been wounded; would destroy it and fill the nerve canal.

Dr. Beatty frequently wounds exposed nerves in children's teeth, to relieve congestion, and fills at once; has been very successful with this method of treating such teeth; uses arsenic in the incisors, as well as in other teeth.

Dr. Southwick would not employ arsenic in these teeth; would remove the nerve with a broach, fill the root, and thus preserve the color of the tooth. When a tooth with an exposed nerve is presented to him, fills it with os-artificiel, and when that has become hard, removes enough

of it to admit the forming of a properly formed cavity, and fills it with gold; had seen a tooth treated in this way perfectly healthy at the expiration of two years.

Dr. Whitney exhibited several vulcanizers which had exploded while being used; believed that sulphuric acid was generated in the vulcanizer, which would, in time, destroy the copper at the water line so much that all would be liable to explosion; urged the greatest caution in the use of vulcanizers.

Dr. Hayes indorsed Dr. Whitney, and very earnestly counseled caution in the use of vulcanizers.

Dr. Daboll treats of "Filling over Exposed Pulps" as follows:

"A pulp exposed by the natural decay of the tooth, and that has a portion of its surface entirely denuded, is a dainty subject to deal with. Before it has arrived at this condition it has passed through many tribulations, and only escaped congestion by some rare and happy combination of circumstances. There has been, of course, some inflammation, the result of numberless thermal shocks, if nothing more, and this adds to its natural sensibility a morbid condition that complicates the case excessively. Our first step is to be assured of the absence of congestion, and one of the most reliable indications, to our mind, is the vitality of the nerve filaments in tubuli, and a partial excavation will soon satisfy us. This, with the knowledge we can get of the subject as to the amount and character of pain experienced at different times, will give us a tolerably accurate diagnosis. Having removed as much of the decay as possible, we lay a pledget of cotton saturated with creasote directly over the part exposed, and seal loosely with sandarac and cotton, great care being exercised that there shall be no pressure; after one or two treatments fill the cavity with zinc. If all right, the pain caused by the filling will pass off in from two to six hours. If subsequently the tooth is very sensitive to heat and cold, cut away a portion of the filling and cap with Hill's stopping. Such cases as these we leave for three months; then remove the filling, and ascertain the condition of the pulp; if we find it alive, refill with zinc and cap with gold. We have had a few cases in which the nerve died, the creasote neutralizing the gases, and the tooth giving no trouble up to the time it was examined; but these are rare, and it will be found that inflammation will supervene in a short time after the temporary filling has been introduced if everything is not all right. When there has been but very little previous irritation, we do not stop to treat with antiseptics, but moisten the cavity with creasote or carbolic acid, and fill immediately with zinc. In numbers of cases where the tooth has been presented in an aching condition, it being the first instance, we have treated and filled with perfect success.

"We do not claim infallibility, but give this as our mode of treatment, from which the percentage of failures has been so small that we feel justified in claiming for it the careful consideration of every man that is not already practicing it. We can save teeth by extirpating the pulps, and if it comes to the worst, it is beyond a doubt a great blessing; but, as compared with the salvation of the pulp and restoring the organ to its normal condition of health and usefulness, it is not a question for argument."

American Journal of Dental Science.

In the November number the leading editorial is upon "Dental Collegiate Education," giving a summary of the course pursued in the Baltimore College.

Permanganate of potassa is recommended as a valuable remedy in the treatment of disease of the antrum, in the proportion of 5 parts to 100 of water, the solution applied in the form of an injection.

Dr. J. D. Patterson relates a case of severe hemorrhage following the extraction of a tooth checked by the following means:

"I cleaned the cavity, removing the old pellets, and plugged with cotton charged with 'Monsel's sulphas ferri;' used pressure with the thumb until bleeding was stopped; dried the parts, and coated with plaster of Paris, keeping dry till hard, and discharged the patient. No return of bleeding. The plaster, for thirty hours, kept hard, and seemed to do as well as any compress could, besides having the advantage of being easily and quickly applied."

Dr. B. M. Wilkerson recommends the following plan to remove wax from the pins of teeth prior to packing with rubber:

"After separating the flask, place the half which has the teeth in it in a basin, then pour *boiling* water (a quart will be sufficient), in a large stream, on the pins, at a distance of three or four feet. Use the precaution to have the flask warm, to prevent cracking the teeth."

Dental Register.

From a chapter of "Odds and Ends," by John Blake, we give the following extract:

"There has been a number of accidents reported lately, caused by the explosion of vulcanizers, and it occurs to me that they may be occasioned by not getting the collar securely screwed on the boiler. (I have reference to the Hayes' machine.) There is more danger to be apprehended when using a new thick packing, which will only let one or two of the screw threads of the collar catch. This is the weak part of the machine, and those using these vulcanizers would do well to observe the following directions in putting them together:

"Turn your collar on the boiler as far as possible, and then screw the nuts on the top of the collar well down to settle the packing; now loosen the nuts so that they do not protrude through the lower part of the collar, and you will find the collar will turn down enough to make one or two more of the threads catch. Repeat this two or three times, if necessary, and you will make your vulcanizer much safer."

"W. F. M." writes on "Os-artificiel" as follows:

"The objections to os-artificiel lie chiefly in the supposed escharotic property of the zinc chloride, which is assumed to destroy the pulp, or lulling it into a repose whence there is no waking. If such were the fact, and no real difficulties of a periosteal inflammation, and the color of the teeth well preserved afterward, what harm has it done? Will root filling answer any better purpose? But it should be remembered that zinc chloride, in the form it is used by us, is diluted, and scarcely possesses any escharotic property. When combined with the oxide, and applied to the exposed pulp without any intermediate protection, there is a slight tinge of pain following, which lasts for a short time only.

And this difficulty may be avoided by applying gently over the bare pulp, after excavation is made, a coating of styptic colloid, which has a soothing and conservative influence. The positive failure in the use of os-artificiel is more in the dentist than in the agent. Nor is it reserved for a large number to achieve success while manipulations are so carelessly or heedlessly made."

Dr. J. G. Willis, under the title "Review," takes exception to an assertion reported in the Proceedings of the American Dental Association, "that the compound generally known as oxychloride of zinc was in fact a hydrochlorate of zinc," closing his article as follows:

"It is unnecessary to pursue the subject further, as what has already been said proves conclusively that, in accordance with the nomenclature of chemistry, the compound under consideration *is properly* called oxychloride of zinc. It has been said that 'what comes out of the mouth, and not what goes in,' defiles the soul; and herein it differs from chemistry, as only such elements as remain *in* a compound have any influence in determining its physical characteristics; such as are given off during the reaction have no effect on the compound whatever. And as the hydrogen of the hydrochloric acid is given off and set free, the compound cannot be correctly called a *hydro*chlorate; and as only *chloride* of zinc is left to unite with the oxide of zinc, it cannot correctly be called a chlor*ate*, as this latter is always formed by a union between chlor*ic acid* and some base, as $ClO_5 + HO = ClO_5KO =$ chlor*ate* of potash."

MISSOURI DENTAL JOURNAL.

We make the following extract from an address by Dr. L. C. Ingersoll:

"We have often discussed topics concerning the first molar—the importance and the extreme difficulty of saving it when at the age of from six to ten years it is found much decayed and causing pain. This is a subject which still demands our closest observation and most careful study. I fear that too many teeth of this class are sacrificed that ought to have been saved. We are too apt to forget, in our diagnosis of the condition of the teeth of children and young persons, that nature's work is still incomplete; that dentine, and enamel too, improve with age; that teeth which in early life tend to rapid decay may, later in life, resist destructive agents, and give promise of permanence even in old age. I am satisfied that in nearly every case where the pain has been remittent, and for no longer period than a few weeks, treatment will restore the nerve to a healthy condition, and the tooth can be filled without subsequent pain. Indeed, I question the practice of extirpating the nerve of any tooth at this early age, and also the wisdom of any attempt to save a tooth that must so early be deprived of its pulp. It is useless to pretend that a nerveless tooth is in so sound and permanent condition as to bear a fair comparison with other teeth. The Maker of man placed this delicate, highly sensitive, and vascular organ within the walls of dentine for a vitally important purpose not to be tampered with.

"This leads me to express the opinion, confirmed, in my mind, by my practice for the last year and a half, that the use of arsenic should be abandoned; that all our treatment of exposed pulps, all our attempts to restore sensitive and aching teeth to comfort and permanent useful-

ness, should be persevering efforts to preserve the nerve alive. I have for many years felt that the practice of extirpation in such cases was wrong, and have always used arsenic with a strong mental protest.

"I must say that there are great difficulties in the way of abandoning its use. It is time-honored; it pleads its thousand cases of rapid relief of pain, and the pleasing response of its many patients. My patients have begged me to use arsenic and kill the pain at once—have been unwilling to spend the time and suffer the annoyance of long treatment, whatever was the promise of success. But I have no hesitation in saying that the very intimate relation between the dental pulp and the peridentium renders it extremely hazardous to attempt to secure a slough of the former with the expectation that the latter will be left in its normal condition. Arsenic is uncontrollably irritating to the vital tissues at a point far beyond the line of devitalization and sloughing.

"Admitting that extirpation of the nerve is *sometimes* necessary, I cannot but deem it a bad practice to devitalize with arsenic.

"In my estimation, the greatest question before American dentists to-day is how to preserve teeth rendered painful by exposure of the nerve, without resorting to the extirpation of the pulp. Every month records new victories in the conservative treatment of this vital tissue of the dental organs, and I believe that the time is near at hand when this shall be declared the established practice.

"My experience since totally abandoning devitalization and extirpation as a prime idea has been most gratifying to myself and generally to my patients."

Dental Times.

The October number is largely taken up with a report of the American Dental Association, and the republication, from the July number of the *Missouri Dental Journal*, of a very interesting paper on "Gold Foil," by Dr. G. V. Black.

British Journal of Dental Science.

We copy the following remarks from "Notes of Practice," by Dr. F. H. Thompson:

"Tic-douloureux has so often been the subject of discussion, and the theory of the disease is now so well ascertained, that any remarks bearing on its pathological histology would be out of place in the short observations I am about to make, my object being to give my own experience in practice of a simulative tic or neuralgia often mistaken for the true disease, but having for its origin pressure upon the nerve by the confined dens sapientia struggling to escape from its narrow dwelling of bone; exostosis; caries of the teeth and sockets; necrosis; inflammation, caused by sudden chill or deranged circulation, ending in the formation of a small sac of matter; local pressure of the teeth upon one another, or, in fact, any or all of the various annoying list of complaints taking their origin in the teeth.

"The practitioner has, on many occasions, to prescribe for and treat facial neuralgia; and, though true tic is, luckily for humanity, a comparatively rare disease, yet how often does one hear of a patient being laid up for weeks by what is denominated tic, originating in mere local causes. In fact, nowadays it is one of the fashionable complaints,

especially among nervous females, who suffer themselves to be treated as confirmed invalids, and submit to tedious courses of medicine, where the true cause lies in some decayed tooth, deep-seated stump, or more frequently a hidden wisdom tooth. The mouth is the last place they think of having examined; and definite treatment in the early stages, by the removal of the cause, might at once put an end to the whole affair. It is consistent with the history of all nervous complaints, that by long indulgence the symptoms assume a chronic form and simulate tic, so that in the end, from habit, the attacks recur with the same precision as if organic disease produced the paroxysms. The fits also appear worse at certain periods of the day, especially after eating, when the circulation is increased, and the nervous system is excited; and even the most skillful are often led astray, and seek for causes far beyond the mere local symptoms. In my opinion, much human suffering might be saved by a proper and definite examination of the mouth in all cases of facial neuralgia, so as to define at once whether the cause of the complaint may not be simple of elucidation and easy of treatment."

EDITORIAL.

MSS. DELAYED.

Owing to the fact of having a large mass of MSS. on hand, we are compelled to delay the publication of a number of valuable communications from esteemed correspondents until the next issue; among these is an interesting report of the proceedings of the Odontographic Society of Pennsylvania, prepared for the January number. J. H. McQ.

BIBLIOGRAPHICAL.

Heat Considered as a Mode of Motion. By John Tyndall, F.R.S., etc., Professor of Natural Philosophy in the Royal Institute and in the Royal School of Mines. New York: D. Appleton & Co., 1869.

A previous edition of this valuable work was favorably noticed in the Dental Cosmos, at some length, by the writer of this article, five years ago. The present issue is from the second London edition, revised, with additions embracing the author's latest researches. To present an analysis of a book so widely and well known would be a work of supererogation. The importance and necessity of this book being in the hands of every dentist who uses a vulcanizer, however, cannot be too strongly urged, for it teaches most valuable and practical lessons of the nature and power of heat, in a manner, the simplicity and attractiveness of which brings them within the reach of persons of ordinary intelligence and culture. That many of the reported explosions of vulcanizers have been due to the most inexcusable ignorance and carelessness, is beyond a question of doubt, and the best corrective and preventive of similar casualties is to be found in a knowledge of the all-powerful agent producing such results.

The author remarks: "In the study of nature, two elements come into play, which belong respectively to the world of sense and to the world of thought. We observe a fact and seek to refer it to its laws,—we apprehend the law, and seek to make it good in fact. The one is Theory, the other is Experiment; which, when applied to the ordinary purposes of life, becomes Practical Science. Nothing could illustrate more forcibly the wholesome interaction of these two elements than the history of our present subject. If the Steam-engine had not been invented, we should assuredly stand below the theoretic level which we now occupy. The achievements of Heat through the steam-engine have forced, with augmented emphasis, the question upon thinking minds—'What is this agent, by means of which we can supersede the force of winds and rivers—of horses and of men?' Heat can produce mechanical force, and mechanical force can produce Heat; some common quality must therefore unite this agent and the ordinary forms of mechanical force."

The solution of this question is interesting to all, and particularly to those who are daily in the habit of employing a force which, while it can be used for the most beneficent purposes, may become the fearful means of destruction and death. J. H. McQ.

Social Statics; or, The Conditions Essential to Human Happiness Specified, and the first of them Developed. By Herbert Spencer. New York: D. Appleton & Co., 1869.

No writer of the present day has occupied a more prominent position in the estimation of men of culture than Herbert Spencer; and while his vast attainments and eminently philosophic cast of mind command the unqualified respect of those who have *carefully* studied his works, whether agreeing or not with his conclusion, at the same time, like all original thinkers, he has been subjected to the unjust criticism of men who have misapprehended and misrepresented his views. He has been described, for instance, as a disciple of the French philosopher Comte, who represents what is called the "Positive" school of modern thought; in response to this, Mr. Spencer has shown in an able pamphlet, not only that there are numerous and important differences between himself and Comte, but that he rejects all that is distinctive of Comte's system.

The work under consideration was published originally in England in 1850, and has been reprinted in this country with the view of completing the American republication of the author's miscellaneous works. It embraces the laws of social growth and improvement, the rights, claims, and duties of various classes of the community, and the philosophy of education, government, and human progress, considered as problems of science, and involves a fundamental organizing thought, that of *Evolution*, the central and governing idea of his philosophical labors, which he has demonstrated in his later works to be *universal in its op-*

eration. The style in which the work is written is calculated to make the theme interesting to the many, as he has avoided "the measured movement which custom prescribes for philosophical works as productive of a monotony extremely repulsive to the generality of readers."

J. H. McQ.

THE CULTURE DEMANDED BY MODERN LIFE. By E. L. YOUMANS. D. Appleton & Co., New York.

This work embraces a series of addresses and arguments on the claims of scientific education, by Professors Tyndall, Huxley, Faraday, Liebig, Draper, Carpenter, Herbert Spencer, Sir John Herschel, Sir Charles Lyell, and several other distinguished men of science, and is edited by Prof. Youmans, who contributes two able articles of his own, one on "Mental Discipline in Education," the other on the "Scientific Study of Human Nature." The prominent object of all these addresses is to counteract the preponderating influence in favor of *mathematics* and *classics* in the systematic education of the young to the *exclusion* of *science,* and to demonstrate that such studies as physics, chemistry, botany, zoology, physiology, etc., are not only highly interesting and important in themselves, but admirably adapted for the development of the intellect, and affording an excellent training for the duties of life by storing the mind with a multiplicity of useful facts, which can be made of practical service in intercourse with the world. Prof. Youmans, who, by-the-by, is one of the most earnest and indefatigable workers in our country, in favoring a reformation in the educational system, very justly remarks:

"The importance of giving a large space to scientific subjects in our educational courses is being every year more and more felt and acknowledged. In place of the excess of verbal acquisition and mechanical recitation, we need more thinking about things; in place of the passive acceptance of mere book and tutorial authority, more cultivation of independent judgment; in place of the arbitrary presentation of unrelated subjects, the branches of knowledge require to be dealt with in a more rational and connected order; and in place of much that is irrelevant, antiquated, and unpractical in our systems of study, there is needed a larger infusion of the living and available truth which belongs to the present time."

Containing, as this work does, the opinions of master-minds in various departments of science, on that all-important question, "What kind of culture shall the growing mind of the age have?" it cannot be too highly commended. No one can read it without profit, and it is peculiarly adapted to the members of a young profession like our own, which has made such remarkable advances within the past quarter of a century.

Creditable as the efforts of the past have been, there is a great work

yet to be accomplished, and an important *part* of that is the proper education of those who are about entering the dental profession, and indeed of a large number of those actually engaged in practice. This cannot be obtained merely by courses of reading and practice in private offices. In scientific matters there is a vast difference between *book-learning* and the *knowledge* acquired by *contact with things*. On this point Prof. Huxley has expressed himself so happily and forcibly that the following quotation will be read with interest:

"If I insist unweariedly, nay, fanatically, upon the importance of physical science as an educational agent,—it is because the study of any branch of science, if properly conducted, appears to me to fill up a void left by all other means of education. I have the greatest respect and love for literature; nothing would grieve me more than to see literary training other than a very prominent branch of education; indeed, I wish that real literary discipline were far more attended to than it is; but I cannot shut my eyes to the fact, that there is a vast difference between men who have had a purely literary, and those who have had a sound, scientific training.

"Seeking for the cause of this difference, I imagine I can find it in the fact that, in the world of letters, learning and knowledge are one, and books are the source of both; whereas in science, as in life, learning and knowledge are distinct, and the study of things, and not of books, is the source of the latter.

"All that literature has to bestow may be obtained by reading and by practical exercise in writing and in speaking; but I do not exaggerate when I say, that none of the best gifts of science are to be won by these means. On the contrary, the great benefit which a scientific education bestows, whether as training or as knowledge, is dependent upon the extent to which the mind of the student is brought into immediate contact with facts—upon the degree to which he learns the habit of appealing directly to Nature, and of acquiring through his senses concrete images of those properties of things, which are, and always will be, but approximatively expressed in human language. Our way of looking at Nature, and speaking about her, varies from year to year; but a fact once seen, a relation of cause and effect, once demonstratively apprehended, are possessions which neither change nor pass away, but, on the contrary, form fixed centres, about which other truths aggregate by natural affinity." J. H. McQ.

BOOKS RECEIVED.

From Charles Scribner & Co., New York.

The Phenomena and Laws of Heat. By Achille Cazin.
The Wonders of Optics. By F. Marion.
Thunder and Lightning. By W. De Fonvielle. J. H. McQ.

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

Regeneration of Cartilage.—The Paris correspondent of the *Med. Times and Gazette* writes : "Some recent experiments have been made by a young physiologist, Dr. Peyraud, of our city, on the regenerative faculties of cartilage by its perichondrium. In these experiments, though the microscope did not do all, it nevertheless helped to establish what the eye, unarmed, could only have supposed and would always have doubted.

"It has long since been thought that the density of the intercellular substance of the cartilaginous tissue, and the scanty amount of nutritive fluid which consequently it can only imbibe, are the main reasons why cicatrization of this tissue progresses so slowly, and why regeneration cannot take place.

"Redfern's experiments, repeated about the same time in France by M. Broca, 1851, have sufficiently proved that the cicatrization of cartilage takes place, but, as they thought, always by means of fibrous tissue and never by cartilage. M. Ollier, who has also made numerous experiments upon both permanent and temporary cartilage, all of which may be found recorded in his great work on the regeneration of bones, has noted in some of them the existence of a few cartilage cells situated in the fibrous cicatrix, close to the line of incision. These cells, however, were so few in number and so imperfect that they could only be recognized with the aid of a chemical reagent (tincture of iodine). M. Ollier consequently concludes with MM. Redfern, Broca, and Meunier, that the cicatricial tissue of cartilage is fibrous and does not undergo cartilaginous transformation. The results of his experiments upon the epiphysial cartilages of long bones were identically the same—that is to say, the gap was always filled by fibrous tissue.

"Kölliker holds the same opinion, and in his last edition of 'Human Histology' he says—'Cartilage shows no disposition at regeneration, and wounds of that tissue are not cicatrized by means of a cartilaginous substance.'

"M. Le Gros, in 1867, presented a *mémoire* to the Société de Biologie, defending the regenerative power of cartilage. His experiments consisted in simple incisions of the articular cartilage, care being taken not to allow the air to enter the cavity of the joint, which was accomplished by displacing the integuments so that the opening in the skin did not correspond to the wound of the articulation. These experiments proved that cartilage cells gradually take the place of the fibro-cellular substance, which is the first to form the cicatrix. But the regeneration was a failure whenever the operation was followed by suppuration. Of course, these experiments only succeeded in young animals in whom nutrition is very active, for it is well known that the more nutrition a tissue receives the more apt is it to regenerate itself.

"The great value of Dr. Peyraud's researches consists in the fact that they have established not only the possibility of the regeneration of cartilage, but they have proved, beyond doubt, that this power lies ex-

clusively in the perichondrium, and this permits of a parallelism between the specificity of this membrane and the periosteum.

"The animals experimented on were mostly young dogs, from 2 to 6 months old, because the perichondrium at that age is very thick, can be detached without great difficulty, and, as already observed, is more richly supplied with blood-vessels. The cartilage which is most suitable for these experiments is the costal cartilage. Those of the ear or nose give equal results, but require more care on the part of the operator.

"For those who wish to repeat the experiments I would say: Make an incision parallel to the direction of the rib down to the perichondrium. Incise this membrane along the middle line of the anterior surface of the rib; pass a sharp spatula beneath the perichondrium, denuding it from the portion of cartilage to be removed, so as to leave an empty sleeve of fibrous membrane.

"The result of these experiments—over thirty in number—made by Dr. Peyraud, has been a perfect regeneration of the removed cartilage by cartilage. The chondroplastes were always more numerous and further advanced in their development at the circumference of the rib than in the centre. The two ends of costal cartilage had taken no part whatever in the regeneration; these ends were found rounded off, cone-like, and calcified or ossified. Many of these specimens have been examined by some of our first microscopists (Vulpian, Cornil, Ranvier). Their exactness has also been verified at recent meetings of the Société de Biologie and Société d'Anatomie. The animals were sacrificed from one to six months after the experiments, so that the experimentalist was able to study the regeneration of the cartilage in all its phases.

"The same resections practiced without preservation of the perichondrium gave negative results in each and every experiment. The perichondrium, therefore, or the anatomical element situated upon its under surface, regenerates cartilage just as the osteogenic sheet, situated beneath the periosteum, regenerates bone."

—

"*Sulphocyanides in the Blood and Urine.*—Dr. Leared, in a paper read before the Royal Society (*Proceedings of Royal Society*, No. 114, 1869), states that from the examination of the saliva of fifty individuals taken consecutively, he has established that in the saliva of the great majority of persons a red color is struck with perchloride of iron, a reaction which is due to the presence of sulphocyanide of potassium. It was ascertained that the existence of carious teeth is not requisite for the production of this reaction, because it occurred in many instances in which all the teeth were sound; also that tobacco-smoking was not indispensable, because the color was produced in many cases in which the individuals never used tobacco. It was also remarked that in all the cases in which the absence of the sulphocyanide was noted, although no definite disease was apparent, the health was feeble, and that, on the other hand, a marked reaction with iron usually corresponded with the ordinary indications of sound health.

"Dr. Leared has detected a sulphocyanide in the urine averaging about one-eighth of a grain in sixteen ounces of normal urine—and also in the blood of man and all other vertebrate animals. As far as he has been able to determine, the sulphocyanides exist only in the serum, and this leads Dr. Leared 'to the consideration of that much-vexed question,

the cause of the red color of the blood. So far as concerns exact color, nothing more closely resembles blood than a solution of sulphocyanide of iron. This is *prima facie* evidence that red blood owes its color to this iron compound. The iron is known to be localized in the globules. These are surrounded by a fluid containing sulphocyanic acid in a combination which easily yields the acid when required. Such is the theory at present suggested.'

"'I am not unaware of the difficulties in the way of its acceptance. The color of hæmatin cannot, it is said, depend upon the iron it contains, because nearly the whole of the iron may be removed without affecting the color of the hæmatin.'* But it is not stated that all the iron is ever removed, and it may be that a very small proportion suffices for the formation of the color, while the larger proportion of the metal is held in reserve in the globules in the same manner as sulphocyanic acid appears to be in the serum.

"If Dr. Leared's experiments have been rightly interpreted, it is certain that sulphocyanide of potassium or sodium is not a mere product of the salivary glands.

"Carefully conducted experiments proved that sulphocyanide of potassium neither possesses the power of preventing ordinary fermentation nor that of checking it when already in action, but that it does possess an antiseptic power; but whether or not this property comes into operation in the alimentary canal is a question not yet decided."—(*Amer. Jour. Med. Sci.*)

Spectroscopic Analysis of Blood.—Dr. S. Waterman read "a paper to the New York Med. Jour. Assoc. (*Med. Record*) upon 'Spectral Analysis as an Aid in the Diagnosis of Disease' (*Med. Gazette*), drawn in great part from an elaborate article by Prof. Schneider in the *Wiener Med. Zeitschrift.* Among the points either brought to light or confirmed by the spectroscopic analysis of the blood, under various conditions, we note a few:

"That the red corpuscles are the chief carriers of oxygen from the lungs to the tissues, was already established. It is now proved, as before deemed probable, that this office is performed by their coloring matter, hæmaglobin (otherwise known as hæmatocrystallin, hæmatin being a product of its decomposition). The spectral bands characteristic of the hæmaglobin when charged with oxygen (oxyhæmaglobin) differ from those belonging to it when the oxygen has been given up (reduced hæmaglobin). The spectroscopic phenomena of suffocation have been carefully studied, and afford the best tests for determining whether or not death has been due to this cause. This is likely to prove of great value in forensic medicine; and not less so is our knowledge of the spectroscopic reactions of the blood after the exhibition of toxic agents—for example, prussic acid and carbonic oxide. In slow poisoning by the latter, its amount may be readily determined. Its spectrum is not changed by the presence of carbonic acid. 'At the present stage of our knowledge it is conceded that most gases, even prussic acid, destroy life by suffocation; that the oxygen imbibed by the hæmaglobin is abstracted and appropriated by the inhaled gases, instead of enabling

---

* Elements of Chemistry, by W. Miller, M.D., 3d edit. p. 872.

the system to sustain the functions of life, as is the case in poisoning by sulphuretted hydrogen; or that the noxious substances introduced into the blood deprive the hæmaglobin of its power to undergo its normal metamorphosis into oxyhæmaglobin, as in poisoning with carbonic oxide; or that both effects occur at one and the same time—as probably in poisoning with prussic acid and cyanate of potassa. It is, then, evident that, in poisoning with irrespirable gases, salvation may be expected from artificial respiration and transfusion rather than from the employment of antidotes, which can only act as additional poisons.'"

—

"*Transfusion of Blood. Report of a Vivisection, illustrating Lectures on the Blood.* By Prof. Freer, Rush Medical College. Reported by F. L. Wadsworth, M.D., Chicago, Illinois.—A dog, the weight of which was fourteen pounds avoirdupois, was anæsthetized, the left carotid artery and jugular veins were exposed, a canula inserted into each, and secured by ligatures. Sufficient time was then allowed for the animal to recover his consciousness from the effects of the anæsthetic, when the stop-cock of the canula inserted into the artery was turned, and the blood allowed to flow until sixteen ounces were extracted and the force of the heart's pulsations so reduced that no more could be drawn from the artery with the animal lying horizontally upon his right side. Respiration now gave evidence of syncope, the limbs were rigid, the jaws set, death was impendent.

"Meantime, a portion of the blood drawn had been defibrinated and kept at its normal temperature, by a warm-water bath. It was now (twenty minutes from the time it commenced to flow from the artery) passed through the canula, by means of a syringe, into the jugular vein. In this manner seven ounces of defibrinated blood were returned to the system of the animal.

"On the introduction of the first ounce there was observed decided evidence of increased vigor. During the injection of the second ounce, by some defect in the apparatus, air was admitted into the vein. Instantly the animal succumbed: a tremor affected his entire system, and respiration ceased. Prof. Freer remarked that the animal's life had been sacrificed by the accident; but by convulsive efforts he regained respiration, and in two or three minutes the effects of the occurrence had disappeared. When the seventh ounce had been introduced there remained little, if any, disturbance of respiration; the heart's vigor was nearly restored, the muscular spasm had subsided, and there was apparently no more disturbance of the system than usually occurs at this period after the administration of chloroform for any ordinary operation.

"In eight minutes after the blood had been returned the animal raised his head and observed intelligently; and twelve minutes thereafter he voluntarily raised himself and walked across the room, some twelve or fifteen feet. The day following he was sprightly and playful, and the second day after the operation he traveled nearly a quarter of a mile without any evidence of fatigue whatever.

"This *vivisection* occurred during the delivery of a lecture on the blood, by Prof. Freer, and was introduced to illustrate the function of the red blood corpuscles in their immediate relations to respiration and the maintenance of vitality, and to demonstrate the fact that fibrin takes no immediate part in restoration from exhaustive hemorrhage, serum serving as the vehicle of the vitalizing corpuscle, and that transfusion with

defibrinated blood may be performed somewhat leisurely and with impunity, care being taken that the instruments used are nicely adapted for the exclusion of air from the vessels."*—(*Chicago Medical Journal.*)

Transfusion of Blood.—"Dr. Brown-Séquard reports a curious case of a dog which had just died, having fresh blood passed into the carotid, the dead animal was revived, stood on his feet, wagged his tail, and lived over twelve hours, when he died again."—(*Med. Bulletin.*)

Transfusion of Blood.—The Philadelphia correspondent of the *Western Journal of Medicine* states, that "an interesting case of surgical injury, in which transfusion of blood was successfully employed by Dr. Thomas G. Morton, one of the surgeons of the Pennsylvania Hospital, has been recently under treatment in the surgical wards of the hospital. The patient, a young man possessing a hemorrhagic diathesis, was wounded ten days previous to admission, by falling on the fragments of a pitcher which he had been carrying in his hands, one of the fragments being forced up between the tissues covering the left superior maxilla, having entered on the inner surface of the upper lip. The efforts made to control the hemorrhage which resulted, by means of styptics and pressure, having failed, and the patient becoming much exhausted by the large loss of blood, it was deemed advisable to remove him to the hospital. On admission, Dr. Morton endeavored to occlude the bleeding vessel by acupressure, using for that purpose a long harelip pin, which was introduced on the right side, and carried beneath the base of the nose, emerging some distance on the other side. This being ineffectual, both facial arteries were acupressed as they pass over the border of the inferior maxilla. The hemorrhage still continued, notwithstanding the application of pressure to these arteries, and the left common carotid artery was ligated. The ligation of this artery was successful in controlling the hemorrhage, though the patient was by this time in such a state of extreme exhaustion that death was imminent, and Dr. M. decided to try the effect of transfusion of blood. Two medical students furnished the blood that was required, which, after being strained and placed in a vessel surrounded by water at a temperature of one hundred degrees, so as to prevent coagulation, was injected by means of a large hypodermic syringe (2 ounce) into the medcii basilic veins of each arm. In this manner eleven ounces of blood were infused, the good effects of which were experienced in five minutes by a rallying of the pulse, and other indications of beginning reaction. No more hemorrhage occurred, and the patient rapidly recovered."

Transfusion of Blood.—"Dr. Joseph Buchser reports (*Medical Record*) a remarkable case of general hemorrhage, from the nose, mouth, vagina, and bladder, with purpuric ecchymoses, in which the patient, a woman aged twenty-four, was revived from an apparently moribund condition by the operation of transfusion.—(*The Med. Jour.*)

"We cured one case, and many has since been cured by allowing the

---

* Phosphate of soda, ammonia, and strychnia, with oxygen, nitrous oxide, and various other agents, might be added to the blood for transfusion, to preserve its fluidity and increase its stimulant influence on the vascular, nervous, muscular, and general system.—Z.

patient to eat freely of pickled cucumbers."—(*Ed. Nashville Jour. of Med. and Surg.*)

"*Torsion of Arteries.*—At the Clinical Society on Dec. 10th, Mr. Cooper Forster and other surgeons spoke very favorably of torsion of arteries as a method of arresting hemorrhage. The artery is seized between the blades of the forceps used for holding needles, and then turned rapidly round on its axis four, five, or six times, so as to rupture the internal and middle coats. The groove for holding the needle is better left out in such forceps."—(*Medical Press and Circular.*)

"*Necrosis of nearly the Whole of the Lower Jaw; Removal of the Dead Bone, including one Condyle; Recovery with Perfect Movement of Jaw.* (Under the care of Mr. Christopher Heath, University College Hospital.)—Egbert H., aged 22, from Aylesbury, was sent to Mr. Heath by Mr. Ceely with necrosis of the lower jaw.

"In August, 1868, he had typhus fever in Walsall Union, and during the attack the face became swollen, and discharged both externally and into the mouth. His teeth were all loosened, but none were extracted. In December he was passed on to Aylesbury, and came under Mr. Ceely's care.

"On February 24, 1869, patient was admitted into University College Hospital under Mr. Heath's care. The right side of the lower jaw was immensely swollen, and two inches below the angle was a sinus through which a probe passed up toward the base. Another sinus existed below the right canine tooth, and there had been a third below the left angle, which was now closed. The teeth were all more or less loose, and there were several openings in the gums, from which a most offensive discharge passed into the mouth. The man was well nourished and otherwise in good health, though he had when a child suffered from hip disease. On the day of admission, under chloroform, Mr. Heath extracted the molar teeth of the right side, which were loose, and having divided the gum, extracted a very large sequestrum, comprising the right side of the body of the jaw from the canine tooth to the angle, and containing the mental foramen. The hemorrhage was very free, but was checked by plugging the shell of new bone from which the sequestrum was taken. The plugs were removed on the second day, and the mouth syringed out daily with disinfecting lotion.

"On March 3, 1869, under chloroform, Mr. Heath cleared out some small fragments of necrosed bone left in the right angle of the jaw, and then proceeded to remove the necrosed portion on the left side, which extended as far as the second molar tooth. Mr. Heath attempted to save the incisor teeth, it appearing at first that the alveolus of that part of the jaw was not involved. It proved, however, that the disease had affected the whole thickness of the bone, and the teeth were necessarily sacrificed. Upon removal of the sequestrum there was left a complete framework of new bone, with a deep groove extending from the right angle (which was quite hollowed out) to the second molar tooth of the left side. The mouth bled freely, but this was checked as before by stuffing with lint. The patient made a good recovery, and was able to return to the country in a week, the discharge having almost entirely ceased, and there being a deep groove in the new structures of the jaw from which the sequestrum had been extracted.

"On June 16 the patient returned, there being a portion of diseased bone on the right side. This Mr. Heath extracted, under chloroform, with some difficulty through the mouth, when it was found to include the angle and a great part of the ramus of the jaw. From this operation also the patient made a speedy recovery, and returned to the country, and was not seen again by Mr. Heath until October, when he returned with yet more necrosis, involving the remainder of the right ramus. This was removed with difficulty on October 30, and the man has not since suffered from pain or discharge, so that it seems that the whole of the dead bone has now been taken away.

"Perhaps the most singular feature in this case is the fact that the man has now (December) as perfect movement of the jaw as if no disease had existed, notwithstanding that at the last operation the whole of the right condyle was removed entire with about a third of the ramus. The repair has, in fact, been as complete as possible. When we saw the patient five weeks after the operation, there was some fullness and prominence about the right angle of the jaw, and when the mouth was widely opened the lower jaw was drawn slightly to the right side; but otherwise all the jaw movements were perfectly performed without any pain or inconvenience, a deep groove in the gum, reaching from the right angle to the second left molar, alone remaining to show the former seat of such extensive disease."—(*Medical Times and Gazette.*)

"*Irregular Dentition and Caries of Lower Jaw.*—Dr. Pooley, of Yonkers, presented to the N. Y. Pathological Soc. a small portion of the lower jaw removed by operation from a lady thirty years of age. The dentition of the patient had been very irregular; two of the second teeth of the lower jaw had never appeared, and the others that did were so uneven and deformed that they were extracted to make room for artificial ones. About a year ago she received a blow upon the chin, which was followed by considerable tenderness of the part, thought by her, however, to be principally due to pressure of the plate. Soon a couple of sinuses formed, through which dead bone could be detected. An incision was made upon the part, with a view of removing the necrotic tissue. No loose bone was discovered, and the bare portion was removed by the saw and bone forceps. Two of the principal portions that were taken away contained, imbedded in their substance, a partially developed incisor, which, as the result of the irritation caused by the injury, were the foci of the bone disease."—(*Medical Record.*)

"*Sclerotitis relieved by Extracting a Carious Tooth.*—C. E. Wright, M.D., Indianapolis, Ind. (*Western Journ. Medicine*), was applied to by a young woman, aged 25, with circumscribed sclerotitis about the insertion of the external rectus muscle of the right eye. Patient was experiencing no other difficulty save a severe aching of the second molar tooth on the same side Treatment produced no perceptible good until the carious tooth was extracted, when the inflammation subsided as if by magic."—(*Med. Record.*)

"*Epileptoid Convulsions caused by Carious Teeth.* By John W. Booth, M.D., of Tally-Ho, N. C.—October 7th, 1868, I visited an unmarried lady in an adjoining county, in consultation with a respectable

physician of that county. She had epileptoid convulsions affecting principally some of the muscles of the neck and the right arm. These attacks had been of almost daily occurrence for four years. She had nearly continuously during this time taken many and various remedies empirically, the cause of her affection not having been ascertained, without the slightest appreciable benefit. There was a very slight disposition to anæmia, and beyond this, there was not a symptom upon which to base a diagnosis or therapeutic indication. Appetite, digestion, general health all good, circulatory and generative apparatus acting normally.

"In giving the history of her case, she stated that her first spell came on during an attack of toothache. Upon examining her mouth we found half a dozen carious teeth, and determined that to extract those teeth would afford the best chance of relief. Accordingly all the carious teeth were promptly extracted. There has been no return of the convulsions since. This lady has now improved considerably in flesh, and presents no anemic phenomena. I need hardly add that her spirits are improved in an equal degree."—(*Amer. Jour. Med. Sci.*)

Syphilitic Diseases of Eye and Teeth.—The clinical reporter of the *Medical Press and Circular* says: "Any person attending the practice of the Moorfields Ophthalmic Hospital for any time must be struck to see the amount of cases of inherited syphilitic disease of the eye; that is, the number of cases of total or partial loss of vision in patients with the pegged teeth, and other marks of that disease so well and conclusively pointed out by Mr. Jonathan Hutchinson. Thus we have recently seen two cases of cataract in young persons operated upon when the peculiar teeth pointed to the cause above mentioned, and, in addition to these, we have seen several cases of iridectomia, of lachrymal abscess, and other diseases of various kinds in patients laboring under hereditary taint. We do not know that we have at all remarked the same thing in the practice of specialists in Paris, or in any other continental city."

"*Ptyalism as a Symptom of Syphilis.* By Henry Lee, Surgeon to the St. George's Hospital.—A gentleman had well-marked constitutional syphilis. When I saw him he had not taken a grain of mercury. He was greatly distressed by a copious and constant discharge of saliva from the mouth; this was so great that it glued his whiskers every night to the pillow-case. The gums were red and inflamed, but not very tender or ulcerated. This state of things continued over some weeks without any mercury being administered.

"A medical man had constitutional syphilis. He had used no mercury in any form, except an ointment which he occasionally applied to his hair, and which contained a very small quantity. In October, 1868, this gentleman wrote to me, 'I don't know what could loosen my teeth and inflame my gums so much. It could not have been cold, as the weather had been so fine.'

"Another patient of mine whom I have seen for many months has lately had a severe attack of inflammation of the gums with a very considerable increase in the secretion of the saliva without having taken any mercury for upwards of a year. In this case there was, in addition, ulceration of the throat, which was not present in the other cases."—(*Medical Press and Circular.*)

Salivation from Neuralgia of Third Division of the Fifth Nerve.—(Under the care of Dr. Buzzard, National Hospital for the Epileptic and Paralyzed.)—"Among the out-patients lately was a woman, aged thirty-five, who applied at this hospital in June last, her complaint being of severe salivation. She presented, indeed, all the appearance of a person who had been unduly subjected to mercurial influence. Her speech was rendered thick; the saliva streamed from her mouth, and eating was a matter of great difficulty to her. At first sight the case appeared a singularly inappropriate one for an hospital devoted to diseases of the nervous system; but, by a few inquiries, Dr. Buzzard elicited the fact that the salivation depended upon neuralgia of the third division of the fifth, the concurring symptoms of this affection being well marked. The patient had been subject to tic on the right side of the face for ten years past. She had not taken mercury in any form. Under treatment by chlorate of potash and chloride of ammonium she speedily got relief."—(*Lancet.*)

"*Salivary Fistula.*—(Under the care of Mr. G E. Legge Pearse, Westminster Hospital.)—Charles C——, aged thirty-two, tailor, applied among the out-patients on June 26th, 1869, for relief from an opening in the left cheek, through which the saliva was constantly dribbling, greatly interfering with his work and general comfort. The patient stated that, eight years previously, he went to a surgeon while suffering from an alveolar abscess occasioned by a carious tooth. This was at once opened by cutting through the cheek from the outside. The duct of the parotid gland was no doubt divided at that moment, as the saliva began to escape from the wound almost immediately, and continued to do so up to the time of his coming to the hospital. He then presented the following appearance: there was a depression in the left cheek about an inch in depth, at the bottom of which was an opening sufficient to admit a small probe, surrounded by fine granulations; with care the probe could be passed into Steno's duct; the opening into the mouth was quite obliterated, and the gum was closely adherent to the cheek.

"Mr. Pearse, in operating, separated the cheek from the gum with a scalpel, and made an opening into the mouth communicating with the fistula, through which he passed a seton and tied it in. A day or two after, the dentist removed the stumps of second and third molar teeth.

"July 3d.—Mr. Pearse removed the seton, and passed a large-sized silver probe through the opening; he then brought the bulbous extremity out through the mouth, and bent the probe into the form of a ring, forcing the bulb end through the eye, and so retaining it in position. This Mr. Pearse allowed to remain in until Sept. 7th, when, all purulent discharge having ceased, and the opening into the mouth being quite free, he removed the probe, and proceeded to close the external aperture by paring the edge superficially and bringing the raw surfaces together with two harelip pins.

"The pins were removed on the fourth day, the wound having healed by the first intention.

"The day after the removal of the pins, a few drops of saliva exuded from one of the pin-holes, but this gradually closed, and within a fortnight from the time of the operation the patient was perfectly well.

"Nov. 10th.—The patient presented himself to show that the fistula was now permanently closed, and the deformity from puckering had almost disappeared."—(*Ibid.*)

Ranula.—"At a recent meeting of the Société de Chirurgie, M. Bouchard related a case of 'acute ranula.' A woman eight months advanced in pregnancy, while swallowing a glass of wine, felt a tumor suddenly form in her mouth, which in a few minutes had acquired a size sufficient to obstruct the passage of air and threaten asphyxia. He found her in that condition, having both sides of the suprahyoidean region greatly distended, and with a tumor the size of a large fowl's egg, thrusting back the tongue, and filling the cavity of the mouth, excepting at a small space on the left side. The tumor was livid and fluctuating, and seemed to be caused by effusion under the mucous membrane. On making an opening into it with scissors, the discharge of a considerable quantity of white-of-egg fluid showed that the tumor really was an example of acute ranula. M. Forget, reporting on the case, said that he had also met with a similar case in a lady who, while eating, became the subject of a swelling, which prevented her swallowing, and impeded respiration. On examination he found the buccal floor raised up, but especially along the left side, giving it very much the appearance of a highly distended finger of a glove. A puncture discharged an albuminoid fluid, and restored the normal movements in the parts. The patient had already experienced the same accident while eating three times within six months, but not to the same extent, the inconvenience caused being slighter, temporary, and disappearing spontaneously. In order to prevent the reappearance of the tumor, M. Forget followed up an extensive incision of the wall of the cyst with cauterization by nitrate of silver several times repeated. According to the researches of M. Tillaux, ranula is due to the dilatation of one of the secreting conduits of the sublingual gland, which had become obstructed; but M. Forget does not regard this gland and its appendices as the exclusive seat of ranula, which may arise in the canals of the submaxillary and parotid glands, which, like those of the mammary gland, and, indeed, all glandular apparatus, may undergo considerable dilatation.

"M. Desprès inquired whether, in M. Bouchard's case, obliteration of Wharton's duct had been found. In his opinion, the fact of ranula being produced by such obliteration has not been completely demonstrated. He has seen this canal obstructed by calculi so as only to leave a furrow on their surface for the slow issue of saliva, and yet no ranula has resulted. M. Giraldès observed that two forms of ranula must be distinguished, according as it has its seat in the submaxillary or sublingual gland. The dissections of MM. Tillaux and Guyon have done much to elucidate the origin of sublingual cysts. In this form of ranula the tumor is always developed on the side of the buccal cavity, thrusting the tongue upward and backward, and very rarely depressing the floor of the mouth. In submaxillary ranula the tumor spreads downward toward the neck. M. Guyon observed, as to the doubt entertained by M Desprès of the simple obstruction of Wharton's duct being the origin of ranula, such obstruction has been incontestably demonstrated in several cases. M. Lefort adverted to the important distinction laid down by M. Giraldès between ranula, properly so called, and cysts of the submaxillary gland. He had occasion to see a patient with a tumor under

the tongue, prolonged under the ramus of the jaw and at the side of the neck. Opened by the mouth, scarcely any liquor flowed out, and pressure made on the part of the tumor which projected under the jaw caused none to issue. To evacuate the tumor it became necessary to make a puncture beneath the jaw, and the liquid which flowed thence did not resemble that which issued from the buccal aperture. The distinction laid down by M. Giraldès is therefore of importance as regards indications for operation. M. Forget stated that he was quite aware of the difference between sublingual and submaxillary ranula. He maintains, however, that the dilatation of Wharton's duct may take place toward the mouth as well as toward the neck, and that the line of distinction between sublingual and submaxillary ranula is not so well marked as stated by M. Giraldès. He admits that ranula very rarely arises from a dilatation of Wharton's duct, its cause usually being an obliteration and consecutive ectasis of one of the numerous conduits of the sublingual gland. The principal feature of interest in the present case was, however, its illustration of the acute or sudden production of ranula."—(*Medical Times and Gazette.*)

"*New Uses of the Hypodermic Syringe.*—At a meeting of the Society of Physicians in Vienna, June 5, 1868, Dr Mader spoke of the usefulness of this instrument for drawing out liquids for diagnostic and other purposes. *Allgem. Med. Central Zeitung*, No 50, 1868.

"He has made use of it for the purpose of obtaining blood for examination from cholera patients, and in making a diagnosis in a case of ascites, in which a doubt existed whether chronic peritonitis or cirrhosis hepatis caused the dropsy, the character of the liquid proved it to be a case of cirrhosis. In another case, an abscess in the region of the shoulder, with secondary venous congestion, was emptied with the instrument. He also pumped out a chronic serous exudation from the pericardial sac of an aged female: the first operation yielded a few ounces of liquid, and relieved the urgent symptoms; at a second trial, three ounces were removed. The patient died soon afterward, as she had also hydrothorax. Mader thinks the operation deserves much regard, as it is easily performed, and attended with comparatively little danger. Autopsy revealed the two spots of puncture in the pericardium cicatrized; they had produced no injurious consequences. In future operations the canula should be provided with a stop-cock, so that air may not enter when the body of the syringe is detached in order to empty it; and the body of the syringe might be made of greater capacity.

"He furthermore used a similar syringe for the operation of transfusion, and performed this by plunging the sharp canula into a vein turgesced by pressure; superficial veins were chosen. In order to avoid throwing the blood into the cellular tissue, he recommends that a few drops from the vein be first allowed to escape from the detached canula; when this has taken place we may be sure that the vein has been entered, and we then attach the body of the syringe and gently throw in the blood, or other liquid used for transfusion. He injects at several spots until enough has been entered, and says that patients submit to repeated punctures much more willingly than to the operation of laying bare the vein selected, and then opening it for the application of the

syringe, which not only appears more formidable to them but may be followed by phlebitis."—(*Edinburgh Medical Journal*, November, and *Amer. Jour. Med. Sci.*)

"*Horny Tumor of the Lower Lip.*—Dr. S. W. Gross presented to the Pathological Society of Philadelphia a specimen of conical horny tumor, five-eighths of an inch long and one inch in circumference at its base, removed from the left lower prolabium, where it had existed for three years. The subject of the growth, John F., aged seventy-one years, eighteen months previously noticed a small, round ulcer at its site, which he ascribed to smoking a short, clay pipe, which he always held on that side. During this period, the ulcer, which was the occasional seat of sharp and shooting pain, remaining stationary, and he did nothing for it. It then scabbed over, and the horny tumor formed so rapidly that, in three months, it was an inch and a half long, and resembled a cock's spur reversed. About once every four weeks he clipped the mass with scissors, having previously softened it by means of a bread-poultice, and even then he found it hard to cut. For the past three weeks, the lip at the root of the growth has been the seat of lancinating pain, which sent him to the clinic of the Jefferson Medical College on the 16th of June, when Professor Gross removed it. The horn itself was quite insensible."—(*Amer. Jour. Med. Sci.*)

Tumor of Lip removed by Galvano-Cautery.—The Vienna correspondent of the *Chicago Medical Examiner* writes, "that the galvanocaustic is a favorite method with Prof. Billroth at the present time. About a year ago, I saw a patient three years old, in his wards, with a tumor about as large as a hen's egg on the upper lip. Repeated injections of carbolic acid, tinct. iodine, liquor ferri sesquichloridi, etc., were of no avail. The tumor meantime continued to increase in size. Finally, a wire, armed with a needle, was drawn through the tumor, and the suds attached to the battery. The tumor was thus transfixed in various directions by the wire at white heat. The tumor decreased in size rapidly, and, after one or two repetitions of the process, the child was discharged cured. Removal by knife would have necessitated a plastic and consequent deformity of the face. In other cases, it is sufficient to puncture the tumor in several places with the caustic needle. While in other cases the whole surface of the tumor may be cauterized, and so soon as the slough becomes detached, the process may be repeated, if any traces of the tumor remain. The wound is treated as an ordinary ulcer. By this method there is little or no fear of hemorrhage, which is often a troublesome complication when these tumors are removed with the knife. I may also add, that the galvano-caustic is extensively used here in amputating the neck of the uterus in prolapsus, amputating the penis, cauterizing ulcerating epitheliomas, removing polypous tumors, and for other similar operations."

Malignant Tumors removed by Electrolysis.—"From various sources we hear of the value of the galvanic and electric currents as therapeutic agents. They have, indeed, become so decidedly efficacious in various forms of disease, that it behooves every physician to become

acquainted with what is known regarding them. In a communication to the *N. Y. Medical Record*, Dr. W. Neftel gives the particulars of a case of much interest, which may lead to a revolution in the treatment of cancer. A gentleman, 58 years of age, had a tumor removed—against the advice of many distinguished surgeons—from the mammary region. Soon after, the glands in the axilla became enlarged and they too were removed by operation. Scarcely had the wound healed when a new scirrhous tumor began to grow in the right mammary region and soon attained the size of an orange. From examination of the extirpated tumors, and the concurrent opinion of many surgeons, it was impossible to doubt the malignant character of the growths. At three sittings—on the 27th of April, and the 4th and 7th of May—Dr. Neftel subjected the tumor to electrolysis, or to the decomposing influence of the electric current, subdividing the cathode (negative electrode), in the second and third operations, into three and four branches—that is, three or four needles were inserted into the tumor and connected with the cathode. The first operation lasted two minutes, using ten of Sieman's elements; the second five minutes with twenty elements; and the third ten minutes with thirty elements. Not a drop of blood was lost. After the operation the tumor increased in size, but became softer and more elastic; the general health improved. A month after the first sitting the tumor was a great deal softer and smaller, and in a month and a half more had entirely disappeared. The general health was excellent, with no sign of new deposits. Dr. Neftel adds that soft tumors, nævi, etc., goitre, organic urethral strictures, and spermatorrhœa, yield readily to electrolysis, which also promises to be of value in the treatment of varicose veins and aneurism. Besides allaying pain, its action is threefold: 1st, through mechanical disintegration of the tissues by the nascent hydrogen; 2d, through the dissolving action of the accumulated free alkali (potash, soda, lime); 3d, through the local modification of nutrition (by means of the vaso-motor nerves) of the parts brought under the immediate influence of the current. One of the great advantages of electrolysis is that it is never followed by inflammation, suppuration, sloughing, or other disturbances, and the patient can continue his usual occupation and mode of life."—(*Pacific Med. and Surg. Jour.*)

"*Coma, from Nitrous Oxide.* By Professor T. Gaillard Thomas, at Bellevue Hospital, Dec. 11th, 1869.—Ellen McLester, 19, domestic, Ireland, three years in America; was admitted to Hospital 10th December. She was in perfect health up to Tuesday, 7th December, when she took nitrous oxide, from the hands of a dentist, previous to having a tooth pulled. She has been comatose ever since, says there is nothing the matter, but has a distinct remembrance that she had or was about to have a tooth removed, and, from repeated exclamations of 'my tooth,' seems yet to suffer from it. In answer to questions as to where she is, she replies 'at my mother's.' She presents a robust appearance, remains quiet, with a constant tendency to lapse into unconsciousness, from which a considerable amount of shaking is necessary to arouse her. Questions have to be repeated, and elicit imperfect and unsatisfactory answers. The pulse is perfectly natural. She had double strabismus, which has now disappeared. The face gave the impression of being flushed; but she seemed naturally florid.

"Treatment: let her alone until she recovers. I have known a case in which the coma lasted four days.

"[This patient went out perfectly well a few days afterward.]"—(*Medical Gazette.*)

"*Light and Life.*—It has been proved by recent researches in France that the *red* rays of the spectrum are those to which the important physiological function exercised by the sun on plants is exclusively to be ascribed. The leaves act as analyzers of the white light which falls upon them; they reject and reflect the green rays, and thus get their natural color. If plants were exposed to green illumination only, they would be virtually in the dark. The light which the vegetable world thus refuses to absorb is precisely that which is coveted by animals. Red, the complementary color of green, is that which, owing to the blood, tinges the skin of the healthy human subject, just as the green color of plants is the complement of that which they absorb.

"These facts have been fully stated and illustrated in a paper read by M. Dubrunfaut before the French Academy of Science; and from them he deduces certain practical suggestions. All kinds of red should be avoided in our furniture, except curtains. Our clothes, which play the part of screens, should never be green. This color should predominate in our furniture, while the complementary red should be reserved for our raiment. He also dwells upon the salubrious influences of sunshine. He mentions cases of patients whose broken constitutions were restored by continued exposure to the sun in gardens where there were no trees; and gives an account of four children that had become weak and sickly by living in a narrow street in Paris, but regained their health under the influence of the solar rays on a sandy sea-coast."—(*Boston Journ. of Chemistry.*)

"'*Motion.*—There is a definite store of energy in the universe, and every natural change or technical work is produced by a part only of this store, the store itself being eternal and unchangeable.' What the learned Helmholtz teaches by these few words is important for us all to know, and it is this: Every force or power, that is, energy, that man exerts himself, or that he sees exerted by other animals, or any power or force exerted by natural phenomena—such as by the wind, the waves, or falling water, or what we may term artificial power or force, as exhibited in the steam-engine, or a wound-up clock—is derived from the store of force-energy already existing in things of the earth. There is, in fact, never at any time any new creation of force, but merely a release of it, for the time being, from a state of rest. Hence, force, or energy, merely passes from one thing to another, and it is during this transmission that it becomes apparent under the form of motion."—(*Septimus Piesse, Sci. Amer.*)

"*Plumbago as a Lubricant.*—Every one knows that for heavy machinery plumbago is a good lubricant, but every one does not always think of applying it where it would serve best. It may thus be of value to some of our readers to know that Mr. Thomas Shaw found that a planer whose bed-plate required the force of eight men to slide it when lubricated with the best ordinary material, could be easily

shifted with one hand when plumbago of good quality was applied."—(*Jour. of the Franklin Institute* and *Scientific Jour.*)

"*Stucco.*—It may not be known to all our readers that the substance now much in use for walls, pillars, etc., is at present prepared by mixing plaster of Paris with a solution of gelatine or glue—instead of with water. This, while stiffening more slowly, becomes much harder than with water alone. For white stucco, the proper quality of gelatine must be employed; for colored, less care need be exercised. When the mass has been suitably applied, and sufficiently hardened, the surface is to be moistened and rubbed down with pumice stone until smooth. It is finally to be coated by means of a brush with a concentrated solution of gelatine, and, when perfectly dried, it may be polished with tripoli on a buffer, with the addition of a little olive oil. It is often desirable in using plaster of Paris in the ordinary way, to prevent it hardening too rapidly. This may be easily done by adding a saturated solution of borax to the water in suitable proportion. One volume of the solution to twelve of water will prevent hardening for fifteen minutes; while with equal parts this will not take place for ten or twelve hours."—(*Phila. Ledger.*)

"*Cement for Gas Retorts.*—A new cement, especially adapted to the retorts of gas-works, is very warmly recommended in a German gas-light journal. It consists simply of finely powdered barytes and soluble water-glass; or the barytes and a solution of borax. The joints are to be coated several times with this cement, by means of a brush. The addition of two-thirds of a part of clay improves the cement, and the retorts will then stand a red heat very well. Instead of the water-glass, the solution of borax may be used, or even finely powdered white glass."—(*Ibid.*)

"*Antimonoid.*—A welding power, named antimonoid, has been in use for some time past, in Germany, and found to be of great efficiency. The formula for its preparation has, until lately, been kept a secret; but we now learn that it consists of four parts of iron turnings, three parts of borax, two parts of borate of iron, and one of water."—(*Ibid.*)

"*Gas Furnace.* By MM. Bergé and Delheid. (*Revue Hebdomadaire de Chimie.*)—This furnace, or, better, blast-lamp, is a modification of the Bunsen burners in general use, and differs from the latter in the following particulars:—(1) By the mode of the admission of the air, which is made to come in below the gas, and not on the same level therewith, or above it, as in the ordinary Bunsen burners; (2) by the admission of a larger quantity of air, by making it pass through the entire area of the tube; (3) by the addition of an outer cylinder, placed to prevent the heating of the tube from which the flame issues, by making a current of air pass between the two. From the report of the makers of this apparatus, it appears to be of immense service, especially for fusion of mineral substances requiring a high temperature and long-continued heat."—(*Chem. News.*)

"*Action of Boiling Fluids on Glass.*—Emerling says that Bohemian glass stands acids better than those made with soda. The Berlin porcelain ware is only perceptibly acted upon by alkalies. The action of all boiling liquids upon glass vessels is proportionate to the duration of the boiling, and proportionate to the surface exposed. The action decreases with decrease of temperature; alkalies, even in dilute solutions, attack glass very strongly, acids generally act even less than pure water—with the exception of sulphuric acid. Among the salts, those act most energetically that form insoluble salts of lime—viz., sulphate and phosphate of soda, carbonate of soda, and oxalate of lime. Such salts as form in water readily soluble salts with lime, for instance, chloride of ammonium, act less strongly than pure water, and with a greater degree of concentration of such salts the action decreases."—(*Med. Press and Circular.*)

"*Hager's Rules on Treatment of Platinum Vessels.*—Every beginner in chemical analysis must learn that, though little affected by acids and other powerful agents, except its solvents, platinum may be injured or destroyed by many other articles which hardly ever affect glass or porcelain. Platinum vessels, such as crucibles, dishes, wire, and rods, are at no time to be brought into contact with, or used for fusing either of the following:

"I. Alkaline or alkaline earth sulphides, or their sulphates when liable to be reduced to sulphides.

"II. Nitromuriatic acid, or anything which might evolve free chlorine, iodine, bromine, sulphur, selenium.

"III. Those processes in which silica is separated at a high temperature.

"IV. Fusion, and heating of the caustic alkalies and alkaline earths, as well as their nitrates, and all the salts of lithia.

"V. Fusion, or reduction from their oxides of the fusible metals, like lead, bismuth, cadmium, tin, as also of the oxides of nickel, copper, etc., which give off oxygen at high temperatures.

"VI. Heating or fusion of phosphoric acid and acid phosphates with carbonaceous matter or other deoxidizers.

"VII. Evaporation or calcination of readily decomposable chlorides, *e.g.* sesquichloride of iron, etc.

"VIII. Fusion of iodides and bromides."—(*Chemist and Druggist.*)

Staining Naturally White-colored Woods. M. Mène.—"When naturally white-colored woods are painted over with a concentrated aqueous solution of permanganate of potassa, which is best kept somewhat warm (tepid), it is possible thereby to give such woods the appearance of palissander or walnut wood. Different kinds of wood behave with this solution in different manner; the wood of pear and cherry-trees is rapidly stained; white woods, as, for instance, the acacia (*Robinia pseudo-acacia*), resist a longer time; and resinous woods, like fir, are more difficultly acted on. The rationale is that the permanganate of potassa is decomposed by the woody fibre; brown peroxide of manganese is precipitated and fixed by the potassa, which is afterward removed by washing with water. The wood, after having become dry, is varnished, and is, according to the author, not readily distinguished from naturally dark-colored woods."—(*Les Mondes* and *Chem. News.*)

THE

DENTAL COSMOS.

NEW SERIES.

VOL. XII. PHILADELPHIA, MARCH, 1870. No. 3.

ORIGINAL COMMUNICATIONS.

INVESTIGATIONS OF THE TOOTH PULP.

BY DR. FRANZ BOLL, BERLIN, PRUSSIA.

(TRANSLATED BY HENRIETTE HIRSCHFELD, D.D.S.)

(THE April number of the *Dental Times*, of 1869, presented to its readers a short extract from an article published in the *Quarterly Journal of Microscopical Science*, entitled "Researches upon the Tooth Pulp," by M. Franz Boll, then medical student at Bonn. This extract contained the principal results of his investigations, and as these are of great importance to those interested or desirous of becoming conversant with dental histology, I feel justified in translating and communicating the whole article. At the same time I take great pleasure in introducing to my transatlantic professional brethren this young author. Since this was prepared he has graduated as a doctor of medicine, and has been made assistant to the celebrated Du Bois Raymond, Professor of Physiology at the University of Berlin. Professor Waldeyer, of the University of Breslau, eminent as a histologist and microscopist, says, in his splendid essay on the "Mouth and Development of Teeth," "we owe to Mr. Boll the first *definite knowledge of the condition* of the nerve fibres in the teeth." H. H.)

In the histology of tooth tissue I have directed my attention mainly to two points, the one being but slightly and the other scarcely at all studied. I allude to the termination of the many nerve fibres entering into each tooth. The second—which has produced already a very extensive literature—treats of the proportions of the fundamental tooth substance to the tooth pulps, and the origin of the *first* out of the latter.

1. *The Termination of the Nerve Fibres.*—For the investigation of the nerve termination I can recommend as most suitable the long incisors of the rodents, guinea-pigs, rabbits, etc. The pulp cavity in

animals not too old is quite large, and though the net-work of vessels and capillaries is also here extensively developed, it does not interfere as much as in the teeth of calves and sheep. The following results are obtained on the above-mentioned objects:

If we take the incisor of an animal recently killed, crack it in a vice, extract the pulp, and apply a magnifying power of 200, it will not be difficult to distinguish the coarser anatomical features. The ramifications of a very rich net-work of vessels is to be seen, partly simple capillaries, partly more substantial arterial branches, with a layer of non-striated muscular fibres, and a large number of thick, dark-bordered* nerve fibres, ascending parallel with the longitudinal axis of the pulp in fasciculi of six, eight, or more nerve fibrils. The larger vessels, as well as the nerve fibres, are enveloped in delicate fibrous connective tissue. The pulp does not contain other tissues beside these vessels and nerves; but in the interspaces left by them may be seen the cells of the embryonal pulp remaining, not used in this formation, though they have lost their spindle or spider-shaped form, so characteristic of the embryonical connective tissue.

The first reagent I used in the investigation of the nerves was hyperosmic acid. The weaker solutions of this are excellent in rendering visible the enormous quantity of dark-bordered nerve fibres, as well as the parallel arrangements of the thicker branches. The solutions are, however, of no use in examinations of the more minute ramifications of the dark-bordered nerve fibrils and their transition into the pale.

I expected much of that reagent by which Cohnheim made his important discovery of the free termination of the nerves of the cornea,—the chloride of gold. This acts with wonderful effect on the cornea, as I can testify by my own experience, in marking out the most minute nerve ramifications from the surrounding tissue. Hence I was first inclined to consider this reagent to be the true test for the nerve fibrils, but I am sorry to state that this is by no means the case. There is no coloring of the pulp even in the immersion of the pulps of small teeth. After several modified and unsuccessful experiments, I have abandoned this method and returned to the chromic acid, to which I still give the first rank for the investigations of the most delicate nerve ramifications. I take the pulp from an animal recently killed and place it in a small quantity of a weak solution (C $\frac{1}{32}$ per ct.), and leave it there for nearly an hour, and investigate the specimen by pulling it apart in a drop of the same solution.

In examining a specimen obtained in this way, 500 times magnified,

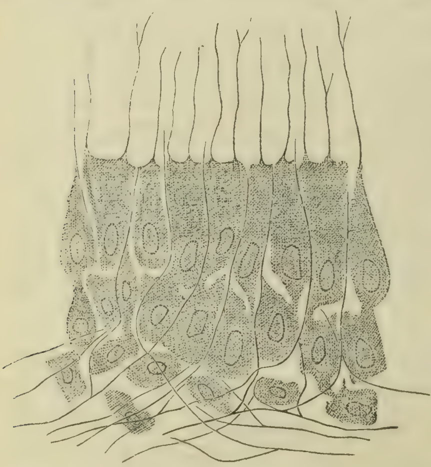
---

* In the original the idea sought to be conveyed by "dark-bordered" and "pale" nerve fibres is represented by the words "markhaltig" and "marklos." It is impossible to translate these literally in this connection, but I think the original idea is fully carried out in the substitution. J. T.

we perceive an enormous quantity of most minute fibrils of a peculiar silky appearance, besides very many dark-bordered ones splendidly marked by this method. These fibrils might, at the first glance, be taken for elastic fibres of the most delicate kind, if they did not, with great probability, present themselves as fine, pale, nerve fibrils. The transition of the dark-bordered into the pale fibrils is very gradual. First the axis cylinder is still enveloped in a comparatively thick sheath, which exhibits distinctly double contours. The medullary part is diminished, the granulations of the myelin are concentrated only at certain parts, where they form the characteristic varicoses. These, also, have double contours, while the extremely thin layer of nervous matter which surrounds the axis cylinder between each two varicoses exhibits only simple contours. At first the varicoses are very close together, and the spaces between them very small, but these latter soon become larger, while the former are less frequent, and soon entirely disappear. Although the fibrils then become very delicate, their varying diameter can be still distinguished. These markings are also soon lost, and they appear as bare, simple, homogeneous axis cylinders. These finest nerve fibrils show, as above mentioned, a certain similarity to elastic fibres, but their very great delicacy, and the little resistance they show to the reagents, prevent their being confounded with the former. By adding water or acetic acid they enlarge directly and disappear. Treated with a cold concentrated solution of oxalic acid they become beautifully distinct for a time. Shortly these bare axis cylinders commence to exhibit faint but distinct varicoses, and after one or two days they likewise have become enlarged and have disappeared. Another convincing proof of their nervous character is, to my mind, their very frequent but always dichotomous division, while an anastomotic connection of two branches, as is so frequently found with elastic fibres, has never been observed. Moreover, the course is generally straight, very seldom undulating like the elastic fibres.

In the investigation of the termination of these delicate, pale nerve fibrils, we are met by quite a peculiar difficulty. It will be found that in applying the usual method, *i.e.* cracking the fresh tooth in a vice and removing the pulp with a fine pincer, we never secure the *whole* pulp, or *all* the soft parts of it. The superficial layer of the pulp, constituting the boundary toward the walls of the cavity formed by the substantia eburnia (dentine), consists of a simple continuous layer of longitudinal cells, which, by their long processes projecting into the tubes of the substantia eburnia, are fastened, as it were, to it. Let one be ever so careful in extracting the pulp from the freshly cracked tooth, a trace of this peculiar layer will rarely be found on the surface of the pulp. Kept in close connection to the walls of the dentine, by penetrating into its tubes with their projections, they will appear to the naked eye as

a thin, slimy covering. By scraping it carefully with a fine knife and placing it under the microscope, it will be observed to consist also, beside this most superficial layer, of another layer of cells, forming the connection with the pulp tissue proper. Now, to obtain the whole pulp perfect, I proceed in the following manner: I crack the fresh tooth *once* in the vice, and place it immediately—pulp and tooth substance still in connection—in the chromic acid solution. After the lapse of an hour I carefully remove a portion of the loose pieces of the tooth, and then try to insert a very sharp knife between the pulp and the dentine. With some good luck and experience one may succeed in this way in obtaining the superficial layers of the pulp *in continuo.* The peripheral processes which are inclosed in the dentinal tubes generally break close to the body of the cell, but by a skillful movement of the knife they may sometimes be successfully extracted of considerable length from the dentinal tubes. The more striking feature of the specimens thus obtained is the dichotomous division of enormously increased quantity of pale fibrils. In pulling it apart with the most delicate needles hardly a piece will be seen without some of these minute fibrils. At the boundary of the vesicular pulp tissue proper and the superficial cell-layers is an especial dense net-work to be seen, usually remaining



fastened to the wall of the pulp cavity. By perseverance some may be procured from among those pulled pieces on which the superficial layers are preserved *in situ.* The proportions of the superficial layers of the pulp, as well as the terminations of the nerve fibrils, present themselves in perfect profile. From the net-work beneath the superficial cell-layer may be observed some delicate nerve fibrils ascending vertically, and finding their way to the free surface of the pulp, between the cells, which are finally nearly in close contact with each other. On the surface they project considerably above the cells. I have drawn two such specimens. The first one* is especially instructive, though the projections of the superficial cells, inserted in the dentinal tubes, are torn near the body of the cells, but above the

* It has not been thought necessary to give all the illustrations accompanying this work of Dr. Boll's. The cut given covers the first mentioned in all essential particulars. It is impossible to represent in wood-cuts the delicate markings so beautifully brought out in the original engravings on steel. J. T.

surface the projecting nerve terminations are preserved and the better to be seen. In the second specimen (see cut), though not as perfect as the first case, the peripheral processes are all preserved, but it is there possible to exhibit the nerve fibrils projecting between them.*

It is now left to elucidate the question: Do these free, projecting ends of the nerve fibrils penetrate into the dentinal tubes or not? I have taken great pains to give undoubted evidence thereof, but have not succeeded satisfactorily. I placed the fresh teeth in chromic acid of about $\frac{1}{32}$ per ct., and concentrated this solution gradually, until, at the expiration of some weeks, it contained 2 per ct. and over. This strong solution had so decalcified them in from five to six weeks, that I was enabled to make thin microscopic sections, without, however, obtaining specimens to give indisputable proofs. Just at the boundary of the substantia eburnia and the pulp was always a dim, granulated layer, rendering a definite decision impossible. Decalcification by weak solutions of nitric or muriatic acid, after a previous hardening in bichromate of potassa, proved still worse. The effect of this was to destroy the nerve fibrils. In spite of the lack of decided proof, I am nevertheless perfectly satisfied that the nerve fibrils penetrate into the dentinal tubes. Beside the merely physiological reason—that of the well-known sensitiveness of dentine—I am also enabled to give anatomical reasons for this assertion. The surface of the superficial cell-layer of the pulp and the inner wall of the pulp cavity are in such close contact, that there would be no room for the free rising nerve terminations. Moreover, the direction of the fibrils is so exactly parallel with the dentinal tubes that we can hardly suppose anything else but of their being extracted from them, like the processes of the pulp cells. We will, therefore, be justified in the conclusion, that there are two kinds of tubes in that part of the dentine nearest to the pulp, one part which receives the processes of the superficial cells, and another to receive the minute nerve fibrils.

(To be continued.)

CONTINUOUS GUM WORK.

BY D. D. SMITH, D.D.S.,

PROFESSOR OF MECHANICAL DENTISTRY AND METALLURGY IN PHILADELPHIA DENTAL COLLEGE.

THE variety of artificial denture known as the continuous gum work has been used by dentists, to a limited extent, since about 1851; the attention of the profession having been drawn to it, at that time, by the

* To me this is the most interesting specimen, as it exhibits distinctly the processes of the cells described by Tomes, and considered by him to be the cause of sensitiveness in dentine and the nerve fibrils proper, continuous with the network of the pulp and penetrating into the dentine. H. H.

publication of the formulæ of Dr. Hunter, together with his mode of constructing the work.

During the ten years intervening between 1850 and 1860, quite a number of American dentists introduced it into practice. A few only met with encouraging success, while the great majority of those attempting its construction, from want of experience and the use of defective material, failed very generally to produce results at all certain or satisfactory. The rapid introduction of vulcanite from this time speedily drove the furnace, with all the perplexities, real and imaginary, of furnace-work, from the laboratory.

To-day it is a rare thing to find a dental student or young practitioner who understands aught of working any kind of ceramic materials pertaining to mechanical dentistry.

Continuous gum work, not commonly seen, is very frequently misunderstood, misrepresented, and unappreciated. For it to be seen, however, in its perfection, is for it to be praised. Its great beauty and very perfect imitation of nature, commend it at once to the admiration of all.

The specimens exhibited by Dr. Allen, at the Paris Exposition, received the highest awards for artificial dentures, and the most flattering encomiums from the press. But even this seems not to have arrested the attention of dentists, nor to have awakened interest in its construction.

A gentleman in the profession, recently writing to this country from Dresden, says: "I know of no one who is making continuous gum work in all Europe;" and a score would probably count, if not outnumber, those who are constructing it in the United States.

The reasons why a denture, like continuous gum work, which possesses in such perfection so many desirable qualities, and with so few real objections, is not in more general use, can be none other than that its merits are not well understood, or that the difficulties attending its construction are inordinately magnified.

It possesses, first, purity or cleanliness, when properly constructed, beyond every other variety of artificial denture with which we are yet familiar. The base plate being the metal platinum in an unalloyed state, undergoes no change when exposed to air or moisture; neither is it affected by any conditions with which it is brought in contact in the mouth, but retains its polish even for years. The mineral cement which unites the teeth to each other and to the plate, when enameled, forms a continuous gum as impervious to all kinds of corrupting agents as the teeth themselves. Thus, when the case is completed, there is presented, without crack, joint, or seam, two plain surfaces, the one mineral, the other metal, each of the most perfect purity, and neither affording hinderances to any condition of cleanliness.

Secondly, its appearance in the mouth or out of the mouth is by far a more perfect imitation of nature than is produced in any other kind of artificial denture, save possibly an occasional set of carved work. The teeth used being single and without gums, may be so arranged in connection with the application of the material, as to restore to the patient every characteristic of the natural organs which it is possible to do with an artificial denture.

In connection with these two leading and very important properties, it possesses that of ready adjustment to every condition of the mouth to which metallic plates can be fitted (excepting certain partial cases), accurate adaptation of plate to the parts upon which it rests, simplicity of construction, and ease and certainty of repair.

The manipulations for its construction, when well understood, are remarkably simple, and the results very certain.

The chief objections urged against continuous gum work, are its liability to accident when out of the mouth, and its weight. Some have even urged as an objection, its lack of fitness for partial cases.

The first objection named, liability to accident when out of the mouth, would hardly be of sufficient importance to receive notice, were it not that many, unfamiliar with the work, are continually misled by it. Continuous gum dentures, when properly constructed, are sufficiently strong to maintain their integrity amid the wear and tear to which they are subjected in performing the offices of the natural organs; and while they are liable to accident, like other dentures, from rough or improper usage when out of the mouth, I think statistics would show that the proportion of accidents is not greater to this than to other kinds of artificial work. But allowing that it is more in danger of breakage, when out of the mouth, than some other varieties, is that to deter the better class of patients from wearing it when its superiority in other directions is understood? As well think to substitute tin or pewter in place of the beautiful porcelain for table use, on the score of economy.

The objection of too great weight is also without good foundation, as a denture is rarely an incumbrance in the mouth by reason of weight save as it is inaccurate in its adaptation. The weight being given to the piece principally by the platina, it may be indefinitely decreased by diminishing the thickness of the plate, or by using the lighter metal, palladium, in the place of the platina.

Its inapplicability in partial cases, where it cannot be used, does not militate against its great advantages for entire cases *where it can be used.*

Continuous gum dentures have, however, one real objection—one which may be urged against all mineral teeth, but with greater force against teeth mounted in this way than against those on vulcanite,

silver, or gold. They have a solid, unyielding, and unnatural feeling, which is experienced in the act of occlusion, and an unpleasant ringing mineral sound, which the quick, experienced ear readily detects.

This feeling and sound is much more unpleasant and perceptible when the plates are first introduced into the mouth, than after they have been for a short time in use.

The estimate placed upon continuous gum work by discriminating patients, notwithstanding its real and fancied objections, is of the most flattering character. Changing to it from gold, silver, or vulcanite, the universal expression is in its commendation. No other denture seems equally valued or fully appreciated.

CHLORIDE OF SODIUM AS A CONDIMENT—IS IT CONDUCIVE TO HEALTH?

BY CHAS. E. PIKE, D.D.S., PHILADELPHIA.

A paper read before the Odontographic Society of Pennsylvania.

Of the various articles used as condiments in connection with human food, no one is perhaps so extensively or universally used as common salt. Physiologists tell us that a certain amount over and above what is naturally found in our food is essential to health. These views are supported by such men as Carpenter, Dalton, Dunglison, and other eminent physiologists. But in science we should take *nothing* for granted. It is our privilege and our *duty* to investigate for ourselves.

Chloride of sodium, as you well know, is a mineral substance belonging to that group of bodies known as the haloid salts. It is composed of chlorine and sodium, equivalent for equivalent. It is found in every tissue of the body, with one exception,—which fact proves it to be an essential ingredient of food. But does not our food *naturally* contain the requisite amount? Dr. Dalton says: "It occurs, of course, in all animal food in the quantities in which it naturally exists in the corresponding tissues, and in vegetable food, though in a smaller amount."

In a corresponding bulk of vegetable matter there is, no doubt, a smaller amount of salt than in animal matter. But it is a well-known fact that a larger amount of vegetable matter is required to support nutrition than of animal. And from this increased amount of material there is doubtless a sufficiency of saline matter extracted to subserve the wants of the system.

The same author also states "that the almost universal demand for salt by the human family is not dependent on a fancy for gratifying the palate, but is based upon an instinctive desire for a substance which is necessary to the proper construction of the tissues and fluids."

Men are too often led to mistake the cravings of a depraved appetite

for the demands of nature, and it is my opinion that such is the case in this instance. This appetite is, to a certain extent, hereditary, but mostly acquired.

An hereditary tendency to certain diseases, as insanity, rheumatism, scrofula, epilepsy, etc., is a recognized fact; and so with the passions and appetites. Numerous well-authenticated cases are on record of children born of parents habitually addicted to the use of alcoholic stimulants, who possessed, from earliest infancy, an appetite for the same material. And this I believe to be, to a certain extent, true with regard to the substance under consideration.

From the earliest period of its existence does the child commence to acquire this appetite from the unnatural secretions of the mother. Saline food in other forms, though often much against the inclinations of the child, soon follow this, and thus a permanent appetite is created for a positively injurious substance.

Three-fifths of all the deaths occurring in this country are children under five years of age! And while I would not wish to be understood as believing that common salt is the sole cause, I *do* believe that it is *one* of the giant evils that are tending so markedly to undermine the health of man, and with the health, the mind.

It has been stated that chloride of sodium used as a condiment acts in a favorable manner by exciting the digestive fluids. But *is it favorable?* I contend that any substance which stimulates these secretions, except it be *natural food*, is detrimental to the health of the individual.

May we not find in the use of this substance a common cause of dyspepsia? By its constant use the glands of the stomach are stimulated to secrete an inordinate amount of fluids; they soon become weakened by excessive action and indigestion, or some other diseased action follows as naturally as effect *can* follow cause.

If any part of the digestive apparatus or its functions become deranged, as a natural consequence the *product* of that process will also be defective. Hence we find imperfect nourishment furnished for the support of the system—one of the most prominent predisposing causes of disease—leaving the system unfortified—open, so to speak, for the invasion of nameless disorders.

Again, if salt *does* assist in digestion, why is it that salted food requires so much more time for digestion than food in its natural condition? As for example, salted beef requires one hour and fifteen minutes longer for digestion than beef in the fresh condition,—the former requiring four hours and a quarter, while the latter requires but three.

Salt not only retards the digestion of meats, but by the process of osmosis, extracts a large proportion of their nutrient material. If a piece of meat be placed in a vessel and covered with salt, without any

water whatever, it will be found in a few hours to be floating in brine. This liquid has for the most part been extracted from the meat, and with it, of course, much of its nutrient property. In the diet scale of the British navy 35 ounces of solid food are allowed daily, of which $4\frac{1}{2}$ ounces are fresh beef, or 9 ounces of salted beef. It is calculated that its value as a nutrient is deteriorated one-half by the use of salt.

Chloride of sodium, applied locally, is an irritant, producing redness of the skin and mucous membrane. Taken in large doses, it excites vomiting. It also acts as a cathartic. Taken in small quantities, and with the food, it will be retained by the stomach, and a certain amount of it is absorbed by the system,—not to subserve any useful purpose of the economy, however, but to be cast out from the body again by means of the kidneys, lungs, skin, etc.

It is an axiom in chemistry that a substance is the same in whatever condition or circumstance it may be found, presenting the same characteristics and composition. Chloride of sodium enters the stomach as chloride of sodium, is absorbed as such, and is cast out of the economy without change. Dr. Marshall says, "The saline substances of the food pass for the most part unchanged through the body, and reappear again in the excretions."

Common salt is a mineral; and as a mineral, is incapable of, in any way, assisting in the nourishment of the body. It is a fact now recognized by nearly all physiologists that animals do not possess tissue-creating power. Or, in other words, that they cannot form tissue from inorganic substances. The vegetable kingdom is the tissue-making portion of the organic world, while animals appropriate this tissue already created, and merely change its form. From this we may infer that chloride of sodium cannot in any way assist in the process of nutrition, unless it be first taken up and assimilated by vegetation.

Of what possible advantage is it then to have this substance passing through the system without subserving any of the wants thereof? Its only action is that of an irritant, which you know is stimulation, and the action of stimulation is, first, an exhilaration, which is followed by a corresponding depression. Thus, as has been stated, it may stimulate the glands of the stomach to secrete more than an ordinary amount of digestive fluids, and a larger amount of food will be digested than otherwise could have been.

But it will be found at the next meal that digestion is more difficult. For nature is ever economical in the expenditure of her products, and the excesses of to-day will be counterbalanced by corresponding deficiencies to-morrow.

It is said that an abstinence from salt disposes to the development of worms in the intestines. But I am inclined to attribute this rather to the violation of some of the laws of nature than to the absence of an extra amount of salt in the food.

Salt is doubtless an excellent remedy to expel these intestinal worms when they do exist. In fact, it is a deadly poison to *many* of the lower forms of animal life. But this fact would not warrant us in taking the amount we do daily, any more than, knowing that morphia will obtund sensibility, we should daily dose ourselves with it in anticipation of pain.

As a proof that salt is essential to health, it is stated that animals, which may be said to live more in accordance with nature than men, *require* it, will not flourish without it, etc. Now, it is my belief that animals in a perfectly natural healthy state do not require it, neither will they partake of it.

The periodical visits of the buffaloes and deer to the salt-licks may be presented as refuting this idea. But it is well known that at the season in which these animals seek those resorts they are more or less affected with grubs, worms, and other parasitical animals, for which, as has been before stated, salt is an excellent remedy, and they instinctively seek this substance for relief. While on the other hand, our domestic animals, who often exhibit such an appetite for it, can by no means be said to live naturally. "Salt contributes powerfully," observes one author, "to prevent in these animals the influence of rainy seasons and wet pasturage, as well as damaged fodder." But here it will be seen that it acts as a remedy for the effects of unnatural food, and not as an accessory or condiment to healthy food. As an illustration that even our domestic animals *will* flourish without extra salt in their food, I take the following statement from the *Health Reformer* of May, 1869: "Dr. A. Ewing, now of the Eastern Hygiean Home, has a horse, six years of age, which appears to be absolutely perfect in soundness of health and kindness of disposition, and it has *never eaten salt.* Some of the agricultural journals state that unless horses are allowed salt their hair would become rough and shaggy; this is not true of the horse in question. A smoother skin and sleeker hair cannot be found on horse flesh."

It is believed by many that chloride of sodium is necessary for the formation of chlorohydric acid in the stomach. But it is by no means certain that chlorohydric acid is at all essential to the process of digestion. Authorities are still very much at variance upon this point. In the experiments of Prof. Dunglison upon the pure gastric juice obtained from the stomach of Alex. St. Martin, it is stated that chlorohydric acid was obtained. In a subsequent examination made by Prof. Smith, and others of this city, free lactic acid was obtained, but not the slightest trace of chlorohydric acid could be found.

Bernard, Lehmann and other chemists affirm that lactic acid is the real agent in the solvent process to which the gastric fluid is subservient.

Many persons also contend for the necessity of salt as an article of diet, on account of its antiseptic properties to counteract the putrescent tendency of animal food. And yet there cannot be found a carnivorous animal who ever uses it in any degree. And none of the purely flesh-eating portions of the human family ever use it in any manner or measure. The pampa Indians of South America are an example of this class of people. Their diet is almost exclusively animal, with which they use no salt; and yet they are a remarkably hardy, stout race of men, and apparently subject to no disease.

Gastric juice is of itself markedly antiseptic. When food which has commenced to undergo decomposition is taken into the stomach, all putrescent action disappears. Gastric juice applied to putrefying substances out of the stomach also arrests the process. Recognizing this property, one experimenter has applied gastric juice to foul, indolent ulcers, which caused all fetid and disagreeable odors to disappear.

Liebig states that salt impedes the deposition of fats; that animals will not fatten on salt food. This statement would seem to be in accordance with the fact that salt increases the destructive metamorphosis of the tissues.

The fact that so large an amount of this substance is found in the excretions is proof positive that an excess has been taken into the system.

The large amount and constant appearance of chloride of sodium in the blood has been urged as a proof that it should be taken with our food. But, gentlemen, did it ever occur to you that the blood from which the different analyses we have were made was unhealthy blood, containing an abnormal amount of saline matter, in consequence of the unnatural habits of the individual? Doubtless, if any other salt which is found in the blood should be used in such quantities, and as constantly as chloride of sodium, the excess would be as great.

There are other salts in the body in much larger quantities than chloride of sodium, and their normal quantity is kept up without taking with our food more than is naturally found therein. Thus, chloride of potassium is found more abundantly in the muscles than chloride of sodium. Phosphate of lime is also more abundant in the muscles and in the harder tissues; the amount is from two to four hundred times greater; and yet this amount is maintained, as I before stated, without sprinkling phosphate of lime upon everything we eat.

There are numerous instances upon record which go to prove that salt as a condiment is not only unnecessary, but that beneficial results follow its abandonment, which fact the following case serves well to illustrate:

"Mr. Wm. Bryant, a respectable merchant of this city, in the year 1809 went with a party of men, under direction of the United States

Government, beyond the Rocky Mountains. (To settle some Indian difficulties, I believe.) After exhausting the supply of provisions with which they started, they subsisted during the remainder of their stay with the Indians, nearly two years, entirely, as the Indians did, on the flesh of wild buffaloes and other game, with such esculent fruits and roots as the forest afforded. They had no alcoholic or narcotic substances, nor any other stimulant to use, not even common salt with their food. Most of the men, when they started on the expedition, were more or less disordered in their health, and afflicted with chronic ailments. They were all restored to health, and became, like the Indians among whom they dwelt, remarkably healthy, robust, and active. Their wounds healed in a remarkable manner, with astonishing rapidity, without undue inflammation, and entirely without pain."

This statement, while it does not prove that salt was the whole cause of the derangements from which these men suffered, does go to show that men who have previously been accustomed to its use *can* exist without it, and that, too, in a more healthy condition than when under its influence.

From the facts which I have stated, gentlemen, I arrive at the conclusion that chloride of sodium as a condiment, instead of being the harmless and essential article it is supposed by the majority of people to be, is not only entirely useless, but *positively injurious*. It has not been my purpose to treat the subject at any length, or with that degree of thoroughness which its importance demands, but simply to draw out the ideas of other minds.

CAPPING NERVES.

BY S. WELCHENS, D.D.S., LANCASTER, PA.

The subject of capping nerves with "oxychloride of zinc," in the operation of filling teeth, has of late excited considerable interest in dentistry. Operations upon the natural teeth, with a view of restoring them to health and usefulness after they have become diseased, are very justly regarded as the leading test by which the attainments and skill of a practitioner are measured. That this branch of our specialty should be thus imperious or exacting is by no means surprising when we regard the nature and character of the tissues with which we have to deal, and the extreme delicacy of manipulation necessary to complete success in the undertaking.

To fill a tooth well does not alone consist in filling it securely, but, in the performance of the operation, regard should be had to the future usefulness of the organ, and, therefore, the necessity of a thorough knowledge of the subject in hand should be conceded by all who practice the art.

Much has been said and written in regard to the propriety of destroying an exposed and inflamed nerve, and filling its cavity with gold. When this operation is *well done*, with the health of the membrane properly cared for, we think we hazard nothing in saying, that it is not only the most scientific and substantial treatment, but that it preserves the tooth longer, and the operator feels more certain of the success and durability of his work, than by indiscriminately capping, even with the use of "oxychloride of zinc."

We do not wish to be regarded as taking issue with the opinions and experience of those who have obtained many good results from the latter method of treating a pulp. Capping an exposed nerve, where inflammation has not set in, and especially with the use of oxychloride of zinc,—which is not only a good astringent, but a good absorbent, by which the exudation, which might be thrown off in consequence of slight inflammation engendered by accidentally puncturing the nerve with the instrument, or its momentary exposure to the atmosphere, is taken up,—may be regarded as a safe basis upon which to build a theory as well as a gold filling. But we do take issue with the position that it is "weak" and "sinful" to kill a nerve, when the chances are that any other treatment might cause the formation of a troublesome abscess, with all its consequent horrors of pain and swelling to the patient, with the probable loss of the tooth in the end, and perhaps the loss of a customer, with a corresponding damage to reputation, by the whole affair being, in the estimation of the community at least, a standing advertisement of quackery.

We also take issue with the doubtful policy of reducing the inflammation of a pulp with the use of creasote alone, with the expectation of restoring it to a condition of health in which it might be considered safe to cap it, and then put a solid gold filling upon it.

The subject of capping a pulp with the oxychloride of zinc was pretty thoroughly discussed and ventilated at the late meeting of the "American Dental Association" at Saratoga. The utterances there were terse, and, for the most part, strictly scientific, but in one or two instances most provokingly anomalous.

The following lucid explanation of the action of the oxychloride of zinc upon the pulp might be a true solution, but the line of demarkation between the influence of the agent at work and the diffusion of technicalities is somewhat difficult to find.

To the question, "What takes place between the oxychloride of zinc and the pulp?" Dr. Atkinson replies: "There is an affinity between the oxychloride of zinc and the albuminoid substance of the pulp, and at the point where the satisfaction is complete of this affinity, an insoluble pellicle is formed. Beyond this, on the inner side, the coagulation is less and less, becoming simply astringent, collapsing the capillaries,

driving the blood column—blood corpuscles and all—into the venous radicles, until the recoil of the column by the *vis a tergo* of the circulation reopens the arterial radicles and the capillary system, re-establishing healthy circulation, without the possibility of setting up the inflammatory process, or inducing the exudation of a single pus corpuscle. In case of a very weak pulp, and strong and abundant solution of the hydrochlorate, the coagulation may be effected to the foramen."

To an ordinary mind it would seem that half the mischief to the pulp there described would not only be certain death, but would send the patient howling from the chair. At all events, if it could stand all that, with the usual capping, we would deem it perfectly safe to laden it still further with a solid gold filling.

The oxychloride may possess all the virtues there ascribed to it, and, after carrying the delicate tissues through all those violent changes, its magic power may prevent "the exudation of a single pus corpuscle." But with all its virtues, we are in doubt whether, if applied to a nerve already inflamed, it would so reduce that inflammation as to leave it in a healthy condition, so that by the protection of the filling it would continue to live with no perceptible inconvenience to the patient, or no "appreciable loss of substance." The solution is an escharotic, and in parts, where recuperative power is so low, as in "the capillaries," "the radicles," and the fibres of the pulp above referred to, its caustic properties may do incalculable mischief, and, after all, time might show that the nice theory above quoted would ultimately prove a failure.

We have, however, no controversy with the oxychloride. It is an invaluable and indispensable adjunct to the dental practitioner. We have had splendid results from its use in many ways, but good things frequently lose their real virtues by the endeavor to push them too far. But monuments have been erected to the memory of men who have made discoveries of far less benefit to the human race than that which gave to the profession "*oxychloride of zinc.*"

The other point of inquiry to which we desire to call attention will be apparent in the following quotation from the same source: "Exposure itself is an abnormal state; but I have no pain manifested by my patients, nor the patients of those who have faithfully followed my directions, as far as reported to me, and I have had many of these. The reason of there being no pain is the free use of creasote. *I never purposely destroy a pulp*, and that dentist *is weak or wicked* who would do so." (The italics are ours.) * * * "A portion of the pulp had sloughed away. I resorted to my usual treatment in such cases, sopping the pulp with creasote and covering with cotton and sandarac varnish; this dressing was continued for three weeks; at the end of that time the whole of the body of the pulp was converted into a mass of carbolate of albumen, and came away upon taking hold of it, leaving

the legs in the roots in a healthy condition. Six other pulps in a similar condition, in the same mouth, were treated in the same manner, *without any appreciable loss of substance.* He (Dr. Atkinson) was down on the death penalty; as long as there was life there was hope. Every man in dentistry should bring all his best powers into exercise in the practice of his profession, or he is a sinner."

The anomaly of the position given by these remarks will best be seen by quoting the question which called them forth. It is as follows: "How would you *preserve* a pulp that is exposed and partly suppurated?" The answer, as given above, to this question would seem to be, that he would "*preserve*" such a pulp by *dosing it to death* with creasote, and yet he professes to be "down on the death penalty."

There is, it is true, a manifest difference between killing a pulp in twenty-four hours with the use of a more active agent, and killing it in "three weeks" with creasote. The same results precisely can be obtained in the former treatment as in the latter, even to the point of "leaving the legs in a healthy and sensitive condition." But we have always regarded this as *destroying the nerve.* We would never take this method of "*preserving a pulp,*" especially "*with no appreciable loss of substance,*" even were we "down upon the death penalty." And furthermore, we would be very far from stigmatizing others as being "weak and wicked," or "sinners," for doing with one agent what we were in the habit of doing with another; the difference being only in time, with the advantage on the other side.

We are not unmindful of the distinction which obtains between a pulp that had just been laid bare by the operator and one that had been previously exposed and partly sloughed away. The former he preserves by the use of oxychloride of zinc, as a capping, and the latter *he preserves* by sopping it with creasote, *even to the death.*

Now, we have always discarded the use of creasote, when not mixed with some modifying ingredient, as being too irritating and poisonous in its nature to be applied to a pulp where it was desirable to set up a healthy action. Its chief virtue in subduing pain is that it produces almost immediate disintegration, and thus relieves the inflammatory condition of a diseased pulp, but *never* restores it to health. In the albuminoid substance of the pulp it goes further than *simple narcosis,* superinduced by its narcotic, styptic, and antiseptic properties. It acts upon the pulp precisely as it does upon the membrane, and we have seen the most acute periostitis produced by a single drop of creasote being carried through the foramen after the nerve had been extracted. It is slightly escharotic, an irritant, and, in an overdose, a poison. These properties, in its crude state, are exceedingly active, only allowing its other qualities to interpose their gracious offices when these have run

their course. Its first act, therefore, is not to heal, but to irritate, to burn, and to poison; injuries (and especially to so delicate a tissue as that of which the pulp is composed) that are hard to overcome, rendering creasote too deleterious to establish a healthy action in any tissue, especially by "sopping" such tissue with the unadulterated article. When properly mixed with other ingredients, it is indispensable in the dentist's office, but separately it is fraught with far more mischief than good.

No one will doubt the necessity of saving a pulp where such a thing is possible or practicable; but this can never be done by loading it down with oxychloride and creasote enough to kill a horse, much less a nerve. Oxychloride of zinc forms an excellent capping for the pulp. We are told there is an "affinity" between the two, and that an "insoluble pellicle" is formed after it has been carried through all the stages of intense excitement and acute inflammation; but we apprehend that where a pulp is once inflamed by the slightest exposure, this affinity will be like that which fire has for wood, or which the probe has for the aching tooth. In our experiments with this article, we have used it where its effects resulted in about as much comfort to the patient.

It is a nice point to determine when a pulp can be capped without setting up a pathological condition which will ultimately lead to its death. We treat it as best we can, and then close it in and leave it to battle for itself with those revulsions of the "radicles" as above described; and if it can manage to keep up a healthy circulation after such ebb and flow of the blood corpuscles, and establish no "inflammatory process," or "the exudation of a single pus corpuscle," of course all is safe. But the limit to which such treatment can be carried is by no means settled by the extreme position indicated by the above quotation.

THE USE AND ABUSE OF SALIVA.

BY J. L. SUESSEROTT, M.D., D.D.S., CHAMBERSBURG, PA.

THE subject of this paper has been so often discussed, both in the journals and before the learned societies of our own and kindred professions, that we might consider it well-nigh exhausted; but is it not questionable whether we can ever arrive at a perfect understanding of the *entire* use, or the *ultimate* abuse, that any of the many blessings that we have been provided with by an all-wise Creator is susceptible of? Our power to reduce almost anything to an extreme atomic condition enables us to place its elements beyond our powers of observation or investigation, and thus are we prevented from judging of *all* the uses or guarding ourselves against *all* the abuses that anything can be brought to. We know that the ultimate elements of everything, however disinte-

grated and changed they may become, are never lost, but that despite the ever-active law of change, the original elements of this universe are all here, without any loss or any addition. Man, the most elevated of all the animal creation, perhaps more than any other is blind to the fact that nature has provided him with all needed comforts, probably for the reason that these comforts are so very common. Few appreciate the life-sustaining ether with which we are surrounded, or the crystal streams that gush from our mountain-springs, simply because of the profusion with which they have been supplied. If this were not so, more care would be taken that these should be enjoyed in their purity, and the noxious airs that are breathed by a large portion of the human family, and the vile apologies for beverages that are flowing in an almost uninterrupted stream down human throats, would give place to the products of nature's laboratory. The fluid that has taxed the inventive genius of the dentist, calling into requisition his "coffer-dam" and neatly-applied napkin, is one of the many blessings of animal life that is often made to be a curse rather than a blessing. Given for the purpose of lubrication, and to aid in mastication, deglutition, and digestion, it is often allowed to contain the elements of destruction, not only to those wisely constructed comminuting organs, the teeth, but to the very life of the individual. It would require too much of my time and too much of your space to enter into the many ways by which this is brought about, and for the present we must be content with considering a few of the uses, as far as we are able, of this important fluid, and some of the evil results following its abuse. With the chemical nature of saliva nearly all of my readers are familiar, it being alkaline in its character in greater or less degree, in proportion to the amount secreted by the several glands, that of the parotid being largely more alkaline than that of the others. According to an analysis of Enderlin, the ashes of saliva were found to consist of substances very similar to those in the ashes of blood, and he attributes the alkalinity of saliva, like that of blood, to be due to the tribasic phosphate of soda. This alkaline condition of the saliva bears a direct proportion to the acidity of the gastric fluid secreted at the same time, but is never in sufficient proportion to neutralize the latter in the stomach. That it nevertheless aids in digestion—only, however, acting with a direct chemical power upon the starchy elements of food, and therefore being of minor importance in the digestive action in the carnivora—has been proven by experiments in which perforated tubes filled with food were inserted into the stomach; the process of digestion going on very slowly in those not mixed with saliva, and very actively in those where such admixture had been made. In considering the use of saliva, we first ask, "Why this alkaline condition?" In man, the first important act of digestion is mastication; prehension being performed with the hands, we will consider it of minor importance. With the chemical constitution of the masticatory

organs, the teeth, it is presumed every dentist is familiar. That an acid reaction upon these, even in the slightest degree, would be injurious, is evident to all. That fermentative changes occurring in particles of food will bring about an acid condition of the fluids of the mouth is a familiar fact, and the importance of a counteracting agent, directly applied and abundantly furnished, will not be undervalued. We therefore recognize as one of the most important uses of saliva its depurating power upon the dental organs. This power is only in full force when that important process of digestion, insalivation, is properly performed, and it can only be properly performed when the operation of mastication, which should always accompany it, is brought into full activity. The quantity of saliva secreted is generally in proportion to the dryness and hardness of the food. During sleep there is scarcely any saliva secreted, not more than is enough, aided by the secretion of the mucous follicles, to keep the oral cavity moistened. This is owing to the inactivity of the masticatory muscles and the want of nerve stimulus to the salivary glands. If we fully appreciate the destructive agency of acids upon the earthy salts that make up so large a portion of the teeth, and are also acquainted with the antagonism that exists between acids and alkalies, we will not be slow to value the saliva, in its healthy condition, as one of the most important of agents for their protection. The salivary glands, placed as wary sentinels in front of this cordon of sensitive organs, should never be excited into action for any other purpose than their legitimate use; yet how often do we find their function abused, and their secretion either ejected from the mouth or made to serve as the vehicle of the most destructive agents to the animal economy.

This leads us to notice the abuse that is often made of this very important fluid. I do not intend to enlarge on the many ways in which it is made to bear the vilest filth from the mouths of the slaves of tobacco, the betel-nut, and many other disgusting stimulants; but I wish to direct the attention of the dentist to the fact that this health-giving product of living organs, by a want of cleanliness on the part of the individual, or ignorance and neglect on the part of the physician, is often freighted with elements destructive directly to the dental organs, and indirectly to the general system. There is scarcely any article of food, which if allowed to remain for any length of time in the warm atmosphere of the mouth, and in close contact with particles that have already undergone decomposition, that will not take on the changed condition that will result in the production of acid. The saliva, unable to neutralize this, in many cases because of the overworked condition of the glands secreting it, will become the efficient vehicle to bear the destructive agent into every fissure and sulcus in the dental arches, and by repeatedly bearing a new supply to an abraded surface, and removing the disintegrated tissue, thus forming a new place to act upon, will be made to be an agent in direct antagonism to that which nature in-

tended it should be. And as "a little leaven leaveneth the whole lump," so this perverted and abused secretion continues to carry on the work of destruction, and elements that dwelt in harmony in the same structures are made by the septic action of their own decaying particles to produce the corroding material for the destruction of the entire fabric.

It is scarcely necessary to refer to the fact that, by the administration of medicinal agents that have a highly stimulating action on the salivary glands, and a neglect of the resulting inflammation that may attack the mucous lining of the mouth, injury of a serious character is often inflicted on the teeth, directly by causing them to be loosened from their alveoli, and indirectly by causing the depraved condition of the fluids of the mouth that I have attempted to depict above.

At this point I might follow up the many changes that are brought about in the general system by the violation of essential laws at the portals of that great elaborating organ, the digestive canal, and show that the reception of disgusting and perverted secretions from the mouth into the stomach is productive of many evils. I might show how the gradual but certain destruction of the teeth is sure to result in the most acute neuralgia, that may have its location in almost any part of the economy, or is capable of producing, through impaired digestion, disorders that, in variety and number, would rival those contained in the noted box of Pandora.

Trusting, however, that I have satisfied your readers that the secretion of the salivary glands, in its normal condition, is essential to the well-being of the individual, and that in an abnormal condition it is capable of causing much destruction, I will not trespass any longer on their time or encroach any further on your space.

THE WEDGE.

BY F. K. CROSBY, D.D.S., BOSTON, MASS.

The great assistance to be derived from the employment of the wedge in filling a certain class of cavities, is so apparent that its use for this purpose might be deemed almost universal; but chance has recently demonstrated to the writer that there are still those who do not avail themselves of its benefits. To such the present article is inscribed.

Under the head of "Approximal Cavities," the text-books are wont to mention the danger of not paying sufficient care to the thorough consolidation of the filling at the point nearest the gum. That this caution is needed is amply proven by the defective condition of many of the fillings coming under our notice. I believe that in most instances we may account for this by assuming that the operator was led to slight this portion of his work through fear of the moisture from the

adjacent gum, not allowing himself to use the necessary care lest the approaching moisture should overtake him before the foundation of the filling was laid. To guard against trouble from this source there is no more effectual appliance than the wedge.

Let a stick of orange-wood, for instance, be whittled down to a tapering form, with quite a fine point; then pressed firmly between the necks of the teeth, crowding up the gum, if necessary, as it proceeds, until it is so tightly fixed as to resist considerable pressure. A slight blow with the mallet will prevent all possibility of dislodgment. The remainder of the stick is cut off with a pair of excising forceps, leaving the two ends of the wedge somewhat projecting. This arrangement entirely cuts off the approach of moisture from the gum between the teeth,—that part where napkins cannot be advantageously applied, and where cotton, spunk, and similar substances crowded against the gum, become saturated, and fail to perform their office. Let a napkin be now placed upon the outside of the gum, well tucked down between the wedge and the neck of the tooth to be filled; then carried around inside, and hung over the projecting end of the wedge, with a fold spread underneath to intercept the breath, and the arrangement is complete, leaving the operator with both hands at liberty.

Other incidental advantages suggest themselves. In cases where the gum overhangs the cavity, it may be crowded away as the wedge enters, leaving the cavity freely exposed. In these cases the reflection of light from the wedge is of no little advantage, illuminating an otherwise somewhat doubtful region. When the cavity extends so far under the gum that the wedge cannot go below it, it may partially overlie the cavity, becoming for the time being one of its walls, and the operation is commenced as in the case of a simple crown filling. Where space has been gained by the use of rubber, wood, etc., the wedge retains it, and, if tightly inserted, serves to increase it by its own pressure.

Another application of the wedge for the purpose of controlling moisture, suggested itself to me some time since; and experience has, to me at least, fully proved its value. In filling cavities in the lower teeth, no matter how well packed with napkins the mouth may be, the effort of swallowing may lift the entire mass, and so dislodge them that the saliva will effect its entrance. In such cases, whether the cavity be approximal or crown, I drive firmly between the lower teeth, with a mallet, a strong wedge,—hickory if possible, orange-wood cannot be depended upon for strength,—and leave the end projecting toward the tongue about an inch. Under this I introduce strips of cloth, or tightly-folded napkins, drawing them well up to the gum, and so proceed, packing napkin after napkin under the wedge, pressing down the mass as each new layer is forced in above it, until the result is a solid platform, so to speak, which no effort in swallowing or motion of the

tongue can disturb, acting both as a duct-compressor and napkin-holder. It can be easily applied where, from the shape of the teeth and their close approximation, the application of the rubber-dam would be next to impossible.

FREE MERCURY IN VULCANITE RUBBER.

BY GEORGE B. HARRIMAN, BOSTON, MASS.

On examining with great care a variety of preparations of rubber for dental purposes, I observed the presence of free mercury in small globules, under the microscope.

To be satisfied beyond doubt of the existence of mercury, I examined samples manufactured by four different parties, and when these specimens were vulcanized at from 310° to 320° Fahr., free mercury was easily detected. The power employed for the examination was a one-inch objective, with B eye-piece, manufactured by Tolles, of Boston. The rubber used for dental purposes is composed of 24 parts sulphur, 36 of vermilion, and 48 of rubber. Vermilion contains six parts of mercury to one of sulphur. As there is no doubt of the presence of free mercury in small globules in the vulcanite rubber used for dental purposes, the question arises, How is the mercury set free?*

MISCELLANY.

ABSTRACTS AND SELECTIONS.

BY J. W. WHITE.

Missouri Dental Journal.

Dr. Henry S. Chase writes on "Some of the Remote Causes of Dental Decay," urging attention to "remote influences produced by prenatal causes and acquired diatheses." He asserts his conviction that "the present condition of the teeth of father or mother at the moment of conception will nearly always be represented to a greater or less extent in the offspring," and that "the teeth of the child, during gestation, are affected for good or evil by the degree of health possessed by the dental organs of the mother."

* According to Fownes' Chemistry, mercury volatilizes to a sensible extent at all temperatures from 68° to 70° F. Again, "the salts of mercury are all volatilized or decomposed by a temperature of ignition;" those that fail to yield the metal by simple heating, may in all cases be made to do so by heating in a test tube with a little dry carbonate of soda.

It is possible that the free mercury observed in the vulcanized rubber, by the writer of the above, may have been formed from the sulphuret of mercury or the vermilion by the combined action of the elevated temperature employed in vulcanizing and the sulphate of lime of the plaster models. J. H. McQ.

He cites the following case in illustration of these views:

"A mother, at the conception of a daughter, had the right lateral incisor decayed on its right approximal surface. The cavity of decay was small, and it remained unplugged until after another daughter was born, when it was properly treated and plugged. This was the only decayed tooth, and the only one which had ever been decayed in the mouth of the mother up to this time. When about eighteen and twenty years of age respectively, these daughters became my patients, and I found the only defective teeth in their mouths to be the right upper lateral incisors, which were each decayed on their right approximal surfaces, and these I plugged, at which time the elder one, a married woman, related their previous history."

And in view of such facts, asks:

"If, then, the present condition of the teeth of parents exerts an influence on the ovum at the moment of conception which shall determine the character of the teeth of the child, how important it is that we should be made acquainted with the fact. Is it too much to presume, if the decayed teeth of father and mother are placed in a healthy condition before the conception of a new being, that the teeth of the latter will be of more healthy structure and have less tendency to decay than if the teeth of the former were left in a carious state?"

Mal-nutrition during gestation he considers a fruitful cause of imperfect calcification, and other pathological conditions, in the teeth of the child.

Dr. E. C. Edsill, under the query, "Why do the Teeth Decay?" after calling attention to the fact that the food on which the mothers of the present day subsist has been deprived of those nutritive elements which give strength to the osseous system and perfect calcification to the teeth, urges that,—

"Parents should insist on it that their children not only eat nourishing food, but also that much of it shall be *hard*, requiring considerable effort in mastication.

"A muscle will suffer from innutrition if it has not *action*. Its fibres must be put in daily motion to be healthy. So, too, of the teeth—they need *work*. The mastication of hard substances gives the periosteum of the roots a healthy stimulus, and a healthy nutrition is the consequence.

"Mastication of hard substances also expands the palatal arch, and thus is avoided the crowded condition of the teeth which is to be observed in the mouths of so many children of the present day.

"*Dental irregularities* are much more frequent in the city than in the country, owing to the more luxurious habits of city children. Crowded dentures more surely decay than those which give each tooth sufficient room for its work."

"C" writes on "Extraction and Replacement of Teeth," arguing the feasibility of "extracting teeth and replacing them for the cure of alveolar abscess, when other means fail to cure."

Dr. H. Judd, in continuation of his article in the October number, on "Filling Teeth," expresses himself pleased with experiments in the use of heavy foils ranging from 20 to 60. He says:

"No. 20 works easily in all locations, in small cavities as well as in

large, and is easily driven into any place where No. 2 will go, and I find that it is by no means necessary to lay it in smoothly, one sheet upon another, but it may be folded into smooth ribbons of two or three thicknesses, and then cut into square blocks, when it is ready for use; these pieces may be laid in smoothly when convenient, but they may also be gathered up and placed in the cavity in any shape, as one would a common pellet of No. 2, and it will be easily driven down smooth and solid. No. 60 we cut in pieces about one line square or larger, and find them very tractable in any location where any other kind of foil is used. It is claimed by those who are the most enthusiastic in the use of these Nos., that more gold can be put into a cavity than when thinner foil is used; that it makes a better margin with an equal amount of care, and that it requires less labor to finish up a filling; and lastly, that it requires less time and labor to fill a tooth."

Sol. Horine discusses "Alveolar Absorption and its Treatment," from which we select the following:

"*Treatment.*—First remove all extraneous matter from around the teeth, and where the absorption has taken place as much as one or two lines, remove the edge of the alveolar process with an instrument (particularly on the lingual surface of the superior molars); pay no attention to the bleeding of the gums. Then take granulated *chloride of zinc*, and place upon a piece of glass as much as may be required to be used at one application. Place a napkin between the lip and lower teeth, with the head thrown back sufficiently to prevent the saliva from flowing over or between the teeth; then, with the point of an excavator, apply the zinc between the gums and teeth—being careful not to let it get outside of the gum or get on the lip; after applying to gums around three or four teeth, take another part of the napkin and press against the gums so as to prevent the zinc from flowing on the lip or gum; then give the patient water to rinse the mouth, holding the lip away from the gum until the water is in the mouth, instructing the patient to spit without rinsing the mouth. In the same manner apply to the gums whenever diseased on the labial side.

"It is not usually necessary to use the napkin on the surface of the inferior lingual gums. In the lingual superior the napkin should be placed in the mouth so as to prevent it running down the throat. Should it touch the lips, in many mouths it will cause them to swell. With proper care there is not a probability of burning them. As regards how much and how often, that depends upon the disease. Applications at the start should be made every two days, and as the disease yields, let it be longer between times. The florid gum will bear a larger amount of zinc at a time, and usually heals more rapidly than the pale or consumptive gum around the margin of which exudes a white sanious fluid upon pressure, resembling lac, with a white festoon line upon the superior front."

Canada Journal of Dental Science.

Dr. A. C. Cogswell contributes an article on "Repairing Rubber Work," as follows:

"It often becomes necessary to repair parts of sets, either upper or under, of vulcanite rubber, which in many cases can be done quite readily without the trouble of taking a new impression.

"If an under set, on which only the bicuspids and molars have been

placed, and which necessitates the rubber on the lingual surface back of the neck of the incisors and cuspids, has become broken, by carefully securing the two parts by means of gutta-percha or wax—so as to assume its original shape—it may then be placed in plaster and flasked as for any case; after hardening and removing the upper part so as to explore the inner portion of the rubber and wax, then take an instrument shaped like a chisel and cut away carefully all that portion of the rubber between the bicuspids on each side of the plate. A little caution may be used in cutting at each angle, say back of where the incisors would come when the plate is in the mouth, not to allow the instrument to slip and cut away the plaster, but carefully separating this centre-piece, remove it entirely, then drill and expose the pins of the first bicuspids, and bevel the edges of the plate so as to allow the new rubber to become securely attached to the old, which may be made even more safe by drilling holes in the edges of the old plate When properly packed and vulcanized, it has all the advantages of a new plate, as it is tough and elastic, and not as clumsy or even so liable to break as if all the older part had remained and the new placed over it. The same can be done for any part of a set, or even all the rubber may be removed in some cases, by heating, and allowing the teeth to remain; pack and vulcanize as usual. This method often saves a deal of time and labor, and as time is money, 'tis well to economize."

American Journal of Dental Science.

Professor Austen, in a communication on the subject of "Paradoxes in Dentistry," writes thus:

"Truth is often made forcible by presentation in the seemingly contradictory form of the paradox. We shall thus present an important point, in connection with the adaptation of the base plate, which is often disregarded and perhaps as often either not known or not acknowledged.

"It often happens that, of several plates for the same mouth the *most* perfect fit is the *least* accurate. In illustration of which, take one case of swaged plate and one case of rubber plate.

"In the latter case the greatest care is taken to have the plaster impression perfect and the model without a defect; and yet the piece, made with every precaution, drops under use and fails to give satisfaction. An old fogy rival, who knows perhaps little about 'these new-fangled plaster impressions,' takes an old-fashioned wax impression (possibly none of the best), and his piece fits perfectly, to the great detriment of modern dentistry, and the college trained D.D.S.

"In the former case—we make our dies, with such regard to their composition, as shall prevent any possible shrinkage of the metal; and the use of such a number, as shall insure to the plate the full size and exact shape of the model. Again we fail; and our rival, using the old-time zinc die (and one only), succeeds to our grievous discomfiture. Such failures are traceable to causes which it may be profitable to look into.

"*First*, the tendency to abandon old methods and materials. Wax, plaster, and gutta-percha are each indispensable as impression materials, and he greatly cripples his resources who uses either exclusively. Each takes a different kind of impression, most useful in its own class of cases—wax, the oldest, equally as useful as gutta-percha, the latest; and both adapted to a large number of cases, for which plaster, apparently the most accurate of all, is unsuited. Old-fashioned zinc not only must not be set aside, because of its contraction; but, for this very

reason, is in many cases to be selected. The discovery of new materials does not render old ones useless, but makes it necessary to discriminate the cases which call for one over the other."

British Journal of Dental Science.

The following is contributed by Dr. John Howard Kyan, on the subject of "Food in Relation to Defective Dentine:"

"Much has been done to remedy the results of decay in teeth, the art of plugging or stopping forming one of the chief features of our profession.

"Caries is generally admitted to be the result of defective formation of the tooth substance, favored, in many instances, either by some abnormal configuration, or some irregular position of the teeth, or by the two combined.

"It is well known that teeth when once formed are incapable of undergoing any change for the better in their composition, in this respect differing from bone, which at one period of life may be defective, and at another perfect.

"The period during which teeth are in course of formation is also well known. Now if, by analysis, we could ascertain in what respect they are defective, and by the same means discover in what food the wanting ingredients are to be found, might not a system of judicious dieting of mothers and young children be pursued with a fair chance of improving the quality of the dentine of the rising generation?

"We have abundant examples of what may be accomplished by a scientific selection of food, in order to promote or restrain the development of certain characteristics in man and the lower animals, such as fat and strength; why can we not apply the same principle to develop good bone and good teeth?

"Young children are too often in the present day deprived of the food provided for them by nature, the mother's milk; white bread and cow's milk being generally the substitutes. The latter, if at all sour, must attack certain atoms of lime, destined to form either bone or tooth; the bread we are careful to reduce almost to the condition of starch by abstracting the bran which contains most of the mineral bone-forming ingredients. Starch becomes converted into sugar on contact with saliva. Thus at an important period of life we adopt means to cut off the supply of raw material and inaugurate the defective formation of organs, the premature loss of which through decay we have in after-life to deplore.

"A familiar instance of the result of a want of lime is to be found in the case of hen's eggs, where the shells are so soft as to be incapable of bearing the slightest pressure. The remedy for this is to allow the hens to have access to lime.

"An insufficient supply of phosphate of lime is supposed to account for the well-known fact that women, when pregnant, suffer unduly from toothache, the tooth substance of the mother being attacked in order to supply material for that of the offspring. Many medical men recognize this shortness of supply and prescribe lime-water. Such a direct application, however, of the crude ingredient is incompatible with the delicate arrangements of nature. 'If you are not taking a food which will supply the phosphate of lime, no kind of medicine that I know of will supply its absence.' These are the words of an authority on this point, Dr. Lankester. His observations are directed to the health and not to the teeth, as are also some articles which appeared recently in the

Lancet on whole meal flour, the more general use of which as food for young children would, doubtless, be attended with beneficial results to their teeth."

THE DENTAL TIMES.

In the report of the proceedings of the Pennsylvania Association of Dental Surgeons :—

"Dr. Wert instanced a case of bleaching a discolored tooth, upon which he had tried all the different modes suggested without result. In desperation he attempted Dr. W. H. Trueman's process of applying nitric acid. The result exceeded his expectations; the change being very marked in a few moments. He subsequently treated it with bicarbonate of soda to neutralize any remaining acid.

"Dr. W. H. Trueman, in regard to the use of nitric acid in bleaching, said that he had studied its effects in teeth in his own mouth. He had found a few seconds sufficient to produce a change of color.

"Dr. Wert explained his mode of manipulation. He used a gold instrument and pure nitric acid. The root was first filled tight with cotton. The nitric acid was kept in the cavity one minute by the watch. On removing the acid the cavity was freely syringed and dried. He then applied the bicarbonate of soda; after which cotton, saturated with creasote, was kept in the cavity for two days. Upon examination, the tooth was found as dark as before treatment. It was then syringed again, and the acid reapplied, allowing it to remain five minutes. The action was not as rapid upon the second application, but the tooth was restored to nearly its natural color. He had not seen the tooth since the last application.

"Dr. W. H. Trueman called attention to the necessity of using chemically pure nitric acid. He followed the use of this by chloride of lime, which would take up any remaining quantity of acid, and also continue the bleaching process. He also followed this with bicarbonate of soda and ammonia.

"Dr. Buckingham had never known nitric acid to be used for bleaching, but had for the destruction of pulps.

"Dr. Peirce said that the affinity between the acid and dentine would be very strong. It would follow the tubules, and remove the parietes and a large proportion of the tooth substance.

"Dr. Buckingham remarked that this would be good theory if we knew whether the acid followed the animal matter of the tooth or removed the inorganic. Nitric acid acted upon animal tissue, and gave it a yellow color. If the animal matter in the tubes is changed from a dark to a yellow, the tooth will necessarily be changed. He considered the subject an important one."

DENTAL REGISTER.

In an editorial on "The Mallet in Filling Teeth," Dr. Watt says:

"In filling teeth with the mallet, the aim should be to condense the gold to the desired extent, with the least possible jarring of the tooth and its surroundings. Our motto should be, 'DRIVE THE GOLD, BUT SPARE THE TOOTH.'

"How?

"The force with which the mallet strikes the plugger is its 'momentum.' The speed with which it moves in making the stroke is its 'velocity.' The momentum of each stroke is to be estimated by multi-

plying the velocity by the weight of the mallet. A mallet weighing one ounce exerts as much force on the plugger as one weighing two ounces, if the velocity of the stroke is doubled.

"The force of the stroke is not imparted to all the particles of the plugger at once It acts first on those struck, and extends from these to the rest. A bullet may be shot through a pane of glass, making but a small round hole in it, while the entire pane may be broken to fragments, by a gentle blow of the same momentum. In the first case, the force of the blow has not time to extend itself, in the brief period required for the bullet to pass through the glass. Consequently, the particles immediately in front of the ball receive its whole momentum, and are torn from their connection. The handle may be driven into a hammer, by brisk blows on its distal end, while blows of the same momentum, with a heavier instrument, will not accomplish the same result. The heavy instrument drives both the hammer and the handle, while the light one, with equal momentum, drives the handle so promptly that it passes in before the motion is diffused to the hammer. The same principle applied to driving the plugger into the gold—that the gold may be driven before the force has time to be diffused to the tooth—requires that the momentum be gained by the combination of a light mallet with strokes of high velocity. With low velocity, much of the momentum extends to the tooth and its surroundings, and all that is so extended is lost on the gold Practically, then, it requires more momentum to condense the gold with a heavy instrument than with a light one, and this in addition to the fact that, with equal momentum, the tooth is more jarred by the former than by the latter. Then, a light mallet with a long handle, in the hand of an accurate striker, is essential to the best results.

"The texture of the mallet is also important.

"Let two balls of soft clay or putty, equal in weight, be suspended in contact. Draw one of them aside, and let it fall against the other, and it will drive it forward, and *go with it*. These balls are inelastic. Let the same be tried with elastic balls, and let us not select soft rubber, for that is not highly elastic. Ivory is much more so; hence let the balls be ivory. The one drives the other forward, as before, but it *does not go with it*, but is instantly arrested in its progress. The more sharply elastic the material of the mallet, the better is the result. Or, to sum up, the mallet should be made of highly elastic material, not of soft wood, leather, or similar substances; not faced with soft rubber or springs; not made of a soft metal; it should be as light as will answer the purpose; it should have a long handle to insure the needed velocity, should be wielded by an accurate striker; and all this, if it be desirable to *drive the gold*, and spare the tooth."

PROCEEDINGS OF DENTAL SOCIETIES.

ODONTOGRAPHIC SOCIETY OF PENNSYLVANIA.

A LARGE meeting was held on Wednesday, December 1, 1869,—the President, Prof. McQuillen, in the chair. In addition to the members of the Society, there were present, as visitors, the students of the Philadelphia Dental College.

Dr. L. B. Cook, of N. Y., presented to the Society a skull which had been exhumed from a gravel-pit on the banks of Seneca Lake, New York State. From the general shape of the cranium and prominent malar bones, together with the history, it was probably of Indian origin.

Dr. Jacob Simonson, of New York, presented two superior bicuspids, a right and left, with three well-developed roots each. The roots divided about the middle of the tooth into a palatine and two buccal, the latter being smaller than the former.

The same gentleman also gave an inferior right lateral incisor. The root was much flattened, and at the apex bifurcated into two distinct terminations of about two lines, one-sixth inch in length,—the outer, or labial, being slightly larger than the inner, or palatine; also more rounded; and each one presented a distinct foramen for the transmission of nerves and blood-vessels.

Dr. S. J. Barber, of Antwerp, N. Y., donated a curious abnormal formation, which he had extracted, in October, 1868, from the mouth of a lady about forty years of age. The specimen had occupied the position of a right superior second molar. In front was what appeared to be a first molar, but the bicuspids had been extracted, as the patient informed him, some time previously. She also said that she had not lost any other teeth from that side of the jaw.

The history and appearance of the monstrosity point to the conclusion that it was the dwarfed and imperfectly formed second and third molars that had been united while yet pulps, and erupted together across the axis of the alveolus—that which appeared to have been the wisdom tooth being placed on the palatine side, and the second molar upon the buccal; it measured eight lines from crown to end of roots, and the united crowns were seven by nearly four lines in length and width.

The same gentleman placed upon the table, for the museum, five teeth that he had extracted in the college clinic—a right superior canine, fourteen lines long, root exostosed; a left superior second bicuspid, twelve lines long with the root deeply grooved and slightly bifur cated at the end; a right superior dens sapientiæ, twelve and a half lines in length, two roots standing on posterior or distal side, being united at the points embracing a portion of the alveolar septum; and a supernumerary tooth, the crown of which resembled a malformed bicuspid, being very slender and tapering nearly three lines in diameter by eleven lines long,—this was from the outside of the buccal surface of the left superior second molar. These teeth were from the mouth of a white woman about thirty years of age; the fifth of this series was from a sister of the above patient, and was a supernumerary tooth that had occupied the same position as the similar one in the first mouth, but was smaller, being seven and a half lines long, and presenting three imperfect cusps, arranged in a line, the middle being the larger. A third

sister presented the same peculiarity, showing an hereditary tendency in the family to this condition.

Charles E. Pike, D.D S., the regular essayist of the evening, then announced his subject as "Chloride of Sodium." (See page 120.)

Dr. Eisenbrey. We take to chloride of sodium as naturally and instinctively as a child to its mother's breast; nay, our health and well-being demand it, and what matters it if we take it in a concentrated form as a condiment on our food, which does not supply the requisite amount, or whether we take it in a more extended form, as it exists naturally in plants and animals, so we get it? It is one mark of civilized progress that we are constantly analyzing, classifying, and reducing—getting much in little—separating the bulky vehicle from the active principle, so that instead of having to take a great mass of food into our stomachs that contains the elements of chloride of sodium in *sufficient* quantities, we take it in its free state; so where the difference lies I am unable to see. Analysis proves that it is one of the elements of our bodies—therefore the supply must be kept up. Theory might say that the salt is formed in the stomach and intestines in sufficient quantities by the combination of our food there found; if so, why do man and animals break down and even perish if deprived of all excepting what they find naturally in their food? That they do is proven by the history of thousands of cases during our late rebellion; he could testify that *salt* was ever the indispensable condiment of our soldiers.

In conclusion, he would say that undoubtedly in the beginning of the Creation, the infant world, the people, animals, and all animated nature thereon, were created in a perfectly normal condition (needing no condiments), and if all had lived as created, the changes in each would have been in keeping, and would have maintained that normal state. But, unfortunately, for us and the world, we were not created infallible; and, as our bodies change form and composition, so does Nature and all her products, and the article of diet that sustained and nourished us at one time utterly fails at another.

We also have the experiences and experiments of learned physiologists, as Carpenter, Dalton, etc., whose testimony must not go for naught. They agree that it is essential to health; still, not being infallible, they may be wrong.

E. R. Groth, M.D., of Russia, said that the importance of salt as a constituent of the healthy economy seemed to be lost sight of. It was supplied bounteously in the food of the Mongolians, although not used by them as a condiment; their diet being principally meat and milk.

The Malays do not use it, but they are by no means a model race for us to take pattern from.

The Japanese, well known for their skill as mechanics and peculiar refinement, use it largely with their food.

W. St. G. Elliot, M.D., of N. J., said: I agree with the essayist that the

use of salt as a condiment is injurious to the economy. That chloride of sodium is essential to the formation of bone, muscle, etc. no one doubts, but nature has made abundant provision for that want in the chemical constituents of our food. There is no question but that a person can not only exist but keep in the most robust health without its use. The assertion that salt is necessary because our appetite craves it, amounts to nothing; it is because we have accustomed our stomachs to this unnatural stimulation that the appetite calls for it in that species of food where it is not found in a large quantity. Does not the drunkard's stomach call for alcohol, the opium-eater for opium, the hashish-eater for Cannabis Indica? Because the world indulges in the salt-eating habit, only proves the world's depravity.

If salt, as a condiment, were necessary for the proper formation of gastric juice, then as gastric juice is essential to digestion, the free use of it would invariably prove beneficial, and its absence a loss which has not been proven by physiologists.

Dr. C. M. Richmond, of Ohio, stated that he had suffered twice during his lifetime from salt-rheum. About ten years ago, under the advice of his physician, he gave up its use as a condiment, and soon recovered; but upon eating his salt rations, while in the army, he found himself again afflicted, but now abstains from it and is well.

Prof. Stellwagen thought that the greatest blessings, if abused, often became the severest curses—as an instance of which, he mentioned the use even of fresh air; but in our civilized state, at least, the too well-known effects of a draught of air should no more cause us to discard it entirely than the abuse of salt, by occasional individuals, would justify our banishment of this condiment from the table.

The gentleman, in his ably-written essay, seemed to have taken grounds, the strength of which, while respecting his opinions and those of the opponents of salt, he could not help calling into question, upon the mere fact of the necessity for stimulants shown to exist from time immemorial. He could not look upon man as so fallen or depraved in his tastes, and felt that it was well that universally received opinions were difficult to overthrow, since there was often a good, though perhaps but seldom known, cause for their being held.

The sickening of the leech by this condiment was very true, and for one he felt rather inclined to look upon it as an argument in favor of the use of it in our food. The leech belongs to a large division of articulate animals, the annelidæ, and in this we find most of the parasites, the eggs of which we are constantly taking into our alimentary canals, at least when among civilized people, and which bring forth, under the favorable circumstances of heat and moisture, the troublesome entozoa that affect the health and comfort of so many persons. Now, as the gentleman admits that it is destructive to these low forms of life,—and it is certainly the fact that in nearly every mouthful of un-

boiled water, or upon almost all of the fruits and vegetables eaten raw, we could find these living ova,—may it not be well to take salt with our food, to make them sick of their abodes?

Among sailors; where quantities of salt are consumed, and the spray drawn in with the air breathed has often much in it, we find a healthy class of men. The proportion of salt water to land is so great that probably we may be justified in saying that the animals living in it outnumber all others many times. Among the order of pisces, there seems to be no inconvenience from its surrounding them, and being taken up very freely by them. The whale belongs to the mammals, yet flourishes in this medium, so saturated with that which the gentleman would have us consider poison.

Let us examine the converse of this proposition. Too pure air and dry ground is injurious to leeches, so we must retire to low lands and make our habitat among the fens and bogs wherein the leech is found.

Dr. Boice agreed heartily with the essayist, and proposed that arsenic, which is used by the Bohemian peasantry and hunters of the Tyrolean Alps, should be substituted as a condiment. He seemed to think its well-known poisonous effects less dangerous, since they were not as hidden, and it would be avoided.

Mr. Walmsley was fond of its taste, and thought that nature's cravings, unless markedly debasing, were very safe guides. The fact that vegetable eaters were particularly fond of it, would seem to show that they need more than meat eaters.

Dr. Pike said: I am aware that salt has been used from time almost immemorial; also that it is often spoken of in sacred writings; but not always in the favorable manner which we might be led to suppose. The first mention we find of it is in Genesis, xix. 25. "But his wife looked back from behind him and she became a pillar of salt." Certainly, it is most emblematical of death in this instance. Again in Deuteronomy, xix. 23; also in Jeremiah, xvii. 6, and in Ezekiel, xlvii. 11. In none of these passages is it spoken of except in connection with death and desolation. "Ye are the salt of the earth; but if the salt have lost its savor, wherewith shall it be salted?" Dr. Trall's views on the above are as follows: "Salt is good as an antiseptic, and preserves those substances upon which it acts from putrefaction, and good men have a similar effect upon the moral world. But when salt has lost its antiseptic property, it is good for nothing; and when men who profess to be good exert no antiseptic influence on the moral world around them, they become like salt which has lost its savor."

Dr. Groth said that of course arsenic could not be urged with any propriety, as it was not a constituent of the human body, which salt is.

Dr. L. B. Holmes, of N. Y., said that he had some time since seen an anecdote of an eminent physician, who, upon being consulted in the case of a man dying from partaking too freely of nuts, had unfortunately

been under the intoxicating effects of liquor, and was not apparently able to articulate but the word salt. At a post-mortem examination, this practitioner was censured, when, to show the effect of the remedy he claimed to have ordered, he sprinkled a little salt over some of the undigested food and proved its utility, as it completed the liquefaction of the nuts.

The President said he could not but admire the ability and independence manifested by the essayist in advancing an opinion so much at variance with those generally entertained, and also the successful manner in which the objections most likely to be brought forward had been anticipated. In saying this, he did not wish to be understood as indorsing the opinion advanced. On the contrary, he regarded salt as the most important and indispensable of all condiments. Without dwelling upon the universality of its use among the civilized and semi-civilized people of all ages and countries, the fact that when children are supplied with food deficient in this article, intestinal parasites make their appearance, and that the most effectual and reliable agent in expelling them, however engendered, is common salt, may be brought forward as an argument of great weight in its favor. Again, in Holland, according to Dunglison, "the ancient laws of the country ordained men to be kept on bread alone, *unmixed with salt*, as the severest punishment that could be inflicted upon them in that moist climate. The effect was horrible: these wretched criminals are said to have been devoured by worms engendered in their own stomachs."

This article is not to be regarded, however, merely as a condiment or an anthelmintic, for in the complex organism of man it plays an important part in the metamorphosis of tissues which is so essential to the maintenance of health and life; and the fact that it is not merely constantly present, but also combined in tolerably definite proportions in the different constituent parts, indicates that it occupies the position of an indispensable article of food. *Vegetables* are *factors*, obtaining from the inorganic world materials for the formation of *organic matter* or *food* for *animals*, but they do not supply all that is essential to the maintenance of life; and man, in feeding upon vegetables and animals, does not obtain all that is required to meet the demands of his economy. Like animals, he is compelled to have recourse to the inorganic world for a supply of material. Viewed in the broadest sense, the air that is breathed and the water that is drank must be regarded as food. The importance of a due supply of mineral constituents to the human economy is made manifest in chlorosis, marasmus, and other affections of a similar character. The employment of iron, combined with the phosphates and carbonates of lime in the form of chemical food, has been so thoroughly tested, and attended with such favorable results, that it is only necessary to make mention of it as a demonstrated fact.

In addition to this, Prof. J. W. Draper, who, as a chemist, physiologist, and philosopher, ranks second to no man, while not asserting that the acid present in the gastric juice is hydrochloric, but, on the contrary, intimating that both lactic and hydrochloric acids may be there, accounts for their presence by supposing that the lactic acid originates in the action of the saliva on the amylaceous bodies, while the hydrochloric acid is derived from the decomposition of common salt taken into the stomach, furnishing, at the same time, sodium for the soda in the bile.

While thus favoring the *use* of salt, the *abuse* of the article, in its too liberal employment, is deserving of the strongest condemnation; for, although there appears to be a special provision on the part of the kidney, by which the quantity of chloride of sodium in the blood is prevented from rising above 41 parts in 10,000, there can be no doubt that the too free use of it is injurious to the system. In the celebrated case of Madame Supiot—mollities ossium, or softening of the bones—Miller says: "The eating of much salt was a prominent peculiarity, which some were inclined to specify as a cause; but it seems to have been rather an accessory of the general perverted state than its origin."

Mr. Walmsley now exhibited injected specimens of the lung, liver, and kindney of a rattlesnake, prepared by himself, and made some remarks thereon. The injection was made from the heart; the fluid used was Dr. Carter's carmine and gelatine, which flows very freely to the minutest vessels, and sets firmly when cold. The sections were mounted in balsam, and excited general admiration for their extreme beauty. The lungs of the rattlesnake were shown to be of a very peculiar structure. The œsophagus is apparently divided downward through its centre, an elastic pouch being firmly attached to each side, and forming the rear of the œsophagus, being in fact a portion of it, and lying immediately beneath the spine. The interior surface of this pouch (which is the true lung) presents to the naked eye the appearance of a piece of tripe, or a very minute scale; examined with a low power, it is found to consist of a very large number of cells, upon the walls of which are arranged innumerable capillaries. This pouch is inflated by the power of breathing, thus bringing a very large surface in contact with the air.

Mr. Walmsley also presented injected specimens of human kidney, and that of the sheep, papillæ of the rabbit's tongue, voluntary human muscle, showing striation very beautifully, and containing trichinæ spiralis (encysted), nucleated cellular tissue from the onion, with the nucleus stained by carmine, together with many specimens of whole insects, and portions of others. Also numerous preparations of vegetable tissues, mosses, etc., all of which elicited the admiration of those present.

The President exhibited the pulp from the palatine root of a right upper molar, which Mr. Barber, one of the students, had removed after making an arsenical application. The pulp presented a congested ap-

pearance even to the naked eye, while under the microscope the enlarged vessels, engorged by the coagulated blood, were examined with much satisfaction by those present.

Four of the finest microscopes were placed upon the table for examining specimens, namely, one of the largest size of Zentmayer's manufacture, an army and a class microscope, by the same maker, also a Powell and Lealand.

Dr. L. B. Holmes gave a description and made drawings of a lamp that he used for vulcanizing. The introduction of atmospheric air was so arranged that the heat could not be raised above 320° Fahr.

Dr. Wm. H. Trueman exhibited an inferior second molar, extracted about the latter part of September, which had been treated by a dentist of this city (now deceased) some six years ago. From the patient he learned that when treated the pulp was exposed, and the cavity (a large one in the crown) first filled (*i.e.* capped) with oxychloride of zinc, giving severe pain for several days. A few weeks after he returned, by appointment; a portion of the filling was removed and amalgam inserted, since which time, until the fall of 1866, when the patient called upon the doctor, suffering from an alveolar abscess, it had given no pain whatever. Under the treatment adopted, the tooth was made comfortable for a time; subsequently it became troublesome, and was removed. Upon splitting it open, there was every evidence that the pulp had been exposed when first treated. The amalgam filling extended about half way to the pulp chamber. Especial attention was called to the oxychloride, which had become extremely hard—much harder than is usually met with, probably owing to the amalgam protecting it from moisture. This specimen he thought illustrated the usual result of capping exposed pulps, although in a few instances the vitality of the pulp might be preserved; as far as his reading, observation, and experience had gone, in a few years they ended as this had done. He did not think the fact of a tooth remaining apparently healthy, and giving no pain for one, two, or even three years, any evidence of final success. If the operator who treated the case before them had examined it a short time before it came into the doctor's hands, he would no doubt have pronounced it a decided achievement. This gentleman could not see anything in the treatment with the oxychloride of zinc to warrant us in expecting any better results.

GEORGIA STATE DENTAL SOCIETY.

THIS Society held its annual meeting in Savannah, Ga., in the hall of the Georgia Historical Society.

The President, Dr. W. H. Burr, of Madison, in the chair.

The attendance was quite large, represented by most of the best practitioners throughout the State.

The Constitution and By-Laws were discussed at length, and finally adopted.

An election of officers for the ensuing year took place, with the following result:

President.—Dr. F. Y. Clark, of Savannah.

Vice-Presidents.—Dr. E. M. Allen, of Marietta; Dr. H. A. Lowrance, of Athens

Corresponding Secretary.—Dr. J. P. H. Brown, of Augusta.

Recording Secretary.—Dr. A. C Ford, of Atlanta.

Treasurer.—Dr. W. Johnson, of Savannah.

The following Standing Committees were appointed by the President:

Committee on Operative Dentistry.—Drs. E. Parsons and W. Johnson, of Savannah; and Dr. A. C. Ford, of Atlanta.

Committee on Mechanical Dentistry.—Drs. U. Van Geissen, of Stockton; H. J. Royall and A. M. Postley, of Savannah.

Committee on Dental Education.—Drs. J. P. H. Brown and S. G. Holland, of Augusta; and E. M. Allen, of Marietta.

Drs. S. G. Holland, P. P. Lewis, W. Johnson, H. J. Royall, and S. Hape were appointed delegates to the Southern States Dental Association, which meets in New Orleans in April; and Drs. E. M. Allen, J. P. H. Brown, A. C. Ford, U. Van Geissen, H. A. Lowrance, and S. Hape, delegates to the American Dental Association, which assembles in Nashville during the first week in August, 1870.

Dr. Burr offered the following resolution:

Resolved, That this Society instruct their delegates to the American Dental Association and to the Southern States Dental Association, to appoint a committee to petition Congress to appoint dentists in the army and navy of the United States.

The reading of essays being in order, Dr. F. Y. Clark read an interesting and able paper on the "Disease and Treatment of the Dental Pulp," which gave rise to considerable discussion.

Adjourned to meet in Atlanta, on the 30th of July, 1870.

CHICAGO DENTAL SOCIETY.

The regular monthly meeting of the Chicago Dental Society was held on Monday evening, February 7th, Dr. J. H. Young presiding, and Dr. Koch, Secretary. The special order of business was a resolution offered by Dr. Sherwood and seconded by Dr. Noble, for the repeal of a code of ethics of the American Dental Association, formerly adopted by this Society. A feature of the code is a clause declaring it unprofessional to advertise, to publish reports of special cases, or solicit operations.

The subject was very freely discussed by the members present, some advocating its repeal, and others opposing the same. At the close of the meeting a vote was taken upon the subject, and resulted in sustaining the code by nine yeas to five nays.

MERRIMACK VALLEY DENTAL ASSOCIATION.

THE annual meeting of this Association was held in Lawrence, Mass., on the 4th and 5th of November.

The following named gentlemen were elected officers:

President, J. H. Kidder; *Vice-Presidents*, L. D. Shepard, D.D.S., A. P. Stevens, D.D.S.; *Recording Secretary*, A. M. Dudley, D.D.S.; *Corresponding Secretary*, D. T. Porter; *Treasurer*, H. Hill; *Librarian*, C. Heath.

The following-named gentlemen were appointed as essayists for the next meeting: Dr. G. A. Gerry, Lowell, Mass.; Dr. E. G. Cummings, Concord, N. H.

Adjourned to meet at Salem, Mass., May 5th and 6th, 1870.

MISSOURI VALLEY DENTAL SOCIETY.

THIS Society met in Nebraska City, Neb., Tuesday and Wednesday, January 11th and 12th, 1870. Dr. E. I. Woodbury presided.

After the reading of the minutes, the President delivered an address on the treatment of exposed pulps.

Dr. Sanborn addressed the Society on extracting teeth for patients of hemorrhagic diathesis; Dr. Thomas presented a patient on whom he had operated for irregularity of teeth.

There was an essay read on "Vital Phenomena."

The second day was spent in clinic—"mallet contour" fillings being the order of the day, Dr. Thomas operating, which we are happy to inform our Eastern professional brethren would compare favorably with such of their contour fillings as we have had the pleasure of seeing.

The "mallet" has not entirely superseded "hand pressure" in all cases; yet it must be very flattering to Professor Atkinson to see the improvement that has been made in filling teeth since its introduction.

J. F. SANBORN, *Secretary.*

HARRIS DENTAL ASSOCIATION OF LANCASTER, PA.

THIS body convened on Feb. 3, with a full attendance of members.

Dr. McCalla, the essayist for the day, read a paper upon the "Extraction of Teeth," illustrating his subject with numerous instruments, both antique and modern.

The following resolution was unanimously adopted:

Resolved, That this Association, in pursuance of their previous action, continue to urge upon the dental profession the necessity of combined and energetic efforts to secure such legislative action as may be necessary to protect the public from the abuses which now exist in dental practice, and that our delegates to the State Dental Society be instructed to advocate such a bill as they in their wisdom may see fit to present to our State Legislature. WM. N. AMER, *Secretary.*

BIBLIOGRAPHICAL.

THE PHENOMENA AND LAWS OF HEAT. By ACHILLIE CAZIN. Professor of Physics in the Lyceum of Versailles. Translated and edited by ELIHU RICH. Illustrated with ninety-two engravings on wood. New York: Chas. Scribner & Co., 1869.

THUNDER AND LIGHTNING. By W. D. FOUVILLE. Translated from the French and edited by F. L. PHIPSON, Ph.D., F.C.S., etc. Illustrated with thirty-nine engravings on wood. New York: Chas. Scribner & Co., 1869.

THE WONDERS OF OPTICS. By F. MASON. Translated from the French and edited by CHARLES W. QUIN, F.C.S. Illustrated with seventy engravings on wood, and a colored frontispiece. New York: Chas. Scribner & Co., 1870.

The above are a series of books received from, and published by, Messrs. Scribner & Co., in which the important subjects upon which they treat are presented in that easy, colloquial, and attractive style characteristic of the French. Imparting the latest discoveries in these different departments of science in a popular manner, they are calculated to interest and instruct particularly those who merely desire a general knowledge of such subjects. The illustrations are numerous, original, and well executed.

In addition to these works, the following very useful elementary text-books for students have been received from the same publishing house. They are, A TEXT BOOK OF CHEMISTRY, by LEROY C. COOLEY, A.M., 1869; A TEXT-BOOK OF NATURAL PHILOSOPHY, by LEROY C. COOLEY, A.M., 1869. In each the text is plain and concise in its descriptions, and the illustrations are quite numerous and appropriate.

IRREGULARITIES AND DISEASES OF THE TEETH. By HENRY SEWILL, Member of the Royal College of Surgeons. London: John Churchill & Sons, 11 New Burlington St, 1870.

This is a monograph of some sixty-five pages, embracing a series of papers, two of which were originally published in the *London Lancet*, written, as the author says, "with the object of concisely explaining the causes, nature, and treatment of irregularities of the teeth."

The other papers were contributed to the *British Journal of Dental Science*, and consist of reports of cases from the author's note-book, with comments upon their pathology and treatment. J. H. McQ.

BOOKS RECEIVED.

THE CELL DOCTRINE: ITS HISTORY AND PRESENT STATE. By James Tyson, M.D., Lecturer in the University of Pennsylvania, and on Physiology in the Pennsylvania College of Dental Surgery, etc. Philadelphia: Lindsay & Blakiston, 1870. J. H. McQ.

SELECTIONS.

ARE RUBBER PLATES INJURIOUS TO HEALTH?

At the present time the use of rubber for dental purposes has become so extended that the above inquiry has become one of much importance. If it is true, as asserted by some, that these plates are actually injurious to health, it is at once manifest that the practice of inserting teeth upon rubber base should be at once condemned. The experience of the last ten years has undoubtedly thrown some light upon this inquiry, but the profession has been exceedingly slow in arriving at an adverse conclusion upon this subject, inasmuch as a great majority are bound by pecuniary considerations to uphold the use of rubber. But the facts that have been slowly accumulating, are finally having their influence, and at this time a majority of the best members of the profession are discouraging its use. A short resumé of the facts elicited by an examination of this subject may be of interest. It was first observed that in a certain proportion of cases the rubber plate produced an irritation, and in a smaller proportion an active inflammation of the mucous membranes with which it came in contact. Statistics are wanting to establish the exact proportion of cases in which these marked effects were produced, but it is certain that they frequently occurred. Perhaps one case in ten shows some slight irritation, and one in twenty passes on to active inflammation, and it is possible that if closely examined a considerably larger proportion than this would be visibly affected. Be the proportion what it may, the fact that these results are frequent is established by the testimony of the best men in the profession.

My own observations only accord with those of others in this respect, and it is a matter of regret that a record of more of the cases that have fallen under my observation had not been kept, but a few of the most remarkable were noted down at the time, and among these I noticed one which was observed about two years ago. The patient, a lady about thirty years of age, dark complexion, bilious temperament, and in pretty good health, had an entire upper set inserted on vulcanized rubber by a practitioner of this city, which she wore with little or no discomfort for six months, though, upon examination, it was found that the mucous membrane was red and injected with blood, though entirely unaccompanied by pain. This observation was made by accident, as the patient called only to have an operation performed upon a lower tooth. As such appearances had been frequently met with before, no particular attention was directed to it until, some six months later, the lady called the second time, complaining of some uneasiness in the vicinity of the horizontal plates of the palate bones. It was at this time that my attention was first called to the case by the practitioner who had it in charge. Examination showed ulceration of the soft tissues to the size of a dime, and a probe revealed the existence of a portion of necrosed bone about the size of a large pea. The whole mucous membrane covered by the plate was in an active state of inflammation. The necrosed bone was removed, and the patient directed to discontinue the use of the plate; the hole closed in the course of a few weeks, a metal plate was substituted for the rubber one, and several months afterward the mouth was healthy and sound.

Another case, of which I noted down the most important features, was brought to my office by a good operator of this city some eight months ago. The man was about forty years of age, nervous tem-

perament, of strumous diathesis, and had been in poor general health for some time. A year before he had had an entire upper set of teeth inserted on rubber, which he had worn without any discomfort at all till a week or two before, when, as he said, he thought something must be the matter with the roof of his mouth. Not, however, on account of any pain felt there, but because upon one or two occasions, when drinking water with his teeth out of his mouth, it seemed in "some way," as he expressed it, "to get into his nose." Upon examination, and from a history of the case, the following facts were elicited: The irritation produced passed on to inflammation, which extended to the periosteum, and finally to the bone, resulting in extensive necrosis of the palate processes of the maxillary bones, and involving a considerable portion of the vomer, but presenting to the eye, upon superficial examination, only the appearance of a phagedenic ulcer, about an inch and a half in length, and at the widest part about three-fourths of an inch wide. A silver probe, however, easily passed through in three or four places into the nose. In a few days the soft parts sloughed off entirely, and the remaining portions of the palate processes also, leaving a large opening from the mouth to the nose, the soft parts at the margin being uneven, ragged, and of a purplish color, and the bones at the margin of the opening being in a rough, necrosed condition.

Under the local treatment of carbolic acid and glycerin,—one drachm of the former to one ounce of the latter,—the extension of the ulceration and necrosis ceased, and in the course of five or six weeks the bony margins of the opening were covered over by healthy mucous membrane, and the mouth presented as healthy a condition as is usually seen after the hard palate has been destroyed, leaving a free communication between the oral and nasal cavities. This, it is true, is an extreme case, but I have seen two cases in the past week that are by no means uncommon. In one, a lady has worn a rubber plate for one year, and the mucous membrane is swollen, red, and inflamed, the inflammation being limited by the margins of the plate. In this case there has been a good deal of uneasiness, and, at times, some pain manifested, but in the majority of cases there seems to be very little or no uneasiness or pain, even where the inflammation is severe. The other case was that of a gentleman who has worn an upper denture for about one year; complained of no pain, but, upon examination, inflammation extended as far as the plate reached, while in two or three other places large ulcers were present, with discharge of pus and ichor. But these cases are now so common that it would be useless to enumerate more of them. Now, we must acknowledge that, as a profession, we have been wanting in caution in encouraging the use of rubber without examining farther into its constituents, which, if we had done at first, would have, no doubt, sufficed to convince us of the danger of using it. Upon examination, we find that vulcanite rubber base—that is, *the common rubber base now in use so extensively—has more than one-fourth of its whole weight made up of sulphur and sulphide of mercury, or as it is more familiarly known, the red sulphuret of mercury.* This mercurial compound was a favorite medicine with some medical practitioners some years ago, and was used by them when they wished to produce salivation more rapidly than could be brought about by other preparations of mercury. We presume that it will only be necessary to direct the attention of the more thoughtful members of the profession to these facts to cause them to substitute some other substance for bases for artificial teeth.—"J.," *in Missouri Dental Journal.*

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

"*Food for Infants.*—Dr. Hiram Corson, in the 'Transactions of the Medical Society of Pennsylvania,' for 1868, has an essay deprecating the old and constant practice of diluting cow's milk with two-thirds water, for the purpose of feeding children to be raised by hand.

"The doctor says, that thirty-two years ago it became necessary to have his own child raised by hand, and he then discovered how ignorant he had been in relation to the quantity of food necessary for an infant, and was, also, enabled to observe the effect of an insufficient amount of food. He contends that the large mortality of children deprived of their mother's milk, is more due to an insufficient quantity of cow's milk, the result of dilution, than the difference in quality, as compared with the mother's milk, therefore resulting in true starvation.

"The higher the organization of the animal, the more abundant will be the nutritive constituents of the milk; and as man is the acme of animal creation, human milk is more highly organized than that of any other animal.

"Instead, then, of diluting other milk than the mother's, it would be more appropriate to add to its nutritive substance.

"A child a month old will take, on an average, a pint and a half of milk a day; but if two half pints of it are water, then the child gets but eight ounces of milk, which is insufficient to supply its demands, and it will soon become emaciated if not increased. Or, if to its proper quantity of milk, three pints of water are added, making over two quarts of the fluid, which is more than the stomach can properly contain during the twenty-four hours.

"It is almost as easy to raise children by hand as by the breast, if they have an abundant supply of good undiluted cow's milk.

"Let the child have as much milk as it will take, and as often as it wants it, but always as near as possible of the temperature of the mother's milk.

"To a pint of cool milk, two tablespoonfuls of boiling water will bring it to about that temperature, which is much the best way of warming it: sweeten well with white sugar.

"By giving pure, sweetened, warm cow's milk, in ample quantities, to the infant deprived of its mother's milk, it may not have colic, sour stomach, irregular bowels, restless nights, emaciation and final starvation; but it will thrive, develop and keep as well and happy as if supplied with its maternal nourishment"—(*Cincinnati Med. Repertory.*)

"*Milk versus Beer.*—A correspondent of the London *Times* writes: 'During the years 1850 to 1857, I pulled in fifty-one public races, of which twenty-five were rowed on ordinary alcoholic beverages, while the last twenty-six were contested on principles of strict teetotalism—the principal liquid consumed being milk. Of the twenty-five races rowed on beer, etc. (1850 to 1854), fifteen were won and ten lost; while of those pulled as a total abstainer (1855 to 1857), I won twenty-

two and lost only four. A large proportion of these races was for pair-oars, my partner in nearly all of them being the late A. A. Casamajor, for six years amateur champion of the Thames. Prior to 1855 my lamented friend invariably pulled the stroke oar of our pair, but on taking to milk instead of beer I found my strength, and especially my "staying" powers, so much improved, that I was able ever after to row stroke to him. All these contests (comprising the highest prizes for which an oarsman can compete) were chronicled at the time in the newspapers. Considering that the two systems of beverage have received in my case a fair trial, and being anxious to see dispelled the popular delusion respecting the strength-giving properties of alcoholic drinks, I hope you may be able to find space for this brief statement of facts.'"—(*The Scientific Journal.*)

Alcohol an Anæsthetic and Depressant.—Dr. B. W. Richardson closes an able lecture on the physiological effects of alcohol (*Medical Times and Gazette*) with the following instructive remarks:

"Reviewing the facts thus noticed, we gather into a few heads the more distinctive results of our researches. We learn that there is a certain general character of action pertaining to all the alcohols so far as we have investigated, but that details of action differ according to chemical constitution—that is to say, weight, *cæteris paribus*, intensifies action, and makes it more prolonged. Under all the alcohols animal temperature falls; under all, when they are administered with sufficient freedom, motion and sensation are paralyzed. The order of action on the various parts of the organism is uniform. The first action seems to be on the centres of voluntary motion, next on the centres of consciousness, gray matter of the hemispheres; and next on centres of sensation, or those centres through which sensations are transmitted to the centres of consciousness. When all these parts are under the alcoholic influence the intoxication is complete; there is all but death.

"And yet this extreme intoxication is not near death—is not near death for this reason, that those centres of power on which the movements of the heart and of the respiration depend remain not unaffected, perchance, but so little affected that they are capable of sustaining a minimum life. The animal fire smoulders, but does not go out. In this particular of action lies the safety of common alcohol in respect to its immediate effects. Every profound intoxication would be a fatal catastrophe were not this involuntary power of breathing and of circulating blood specially retained.

"You will ask me naturally, before I leave this subject, what is the mode of action of the alcohols? Do they arrest oxidation, or do they themselves undergo oxidation? Are they slowly burned in the body, yielding the same products of combustion as are yielded by this burning lamp—viz., carbonic acid and water, or are they not burned at all? The evidence on these points is conflicting. On the one side, there is the evidence of Percy, Perrin, Lallemand, and Duroy, which goes to prove that *ethylic* alcohol is laid up in the tissues until it is eliminated by the urinary and other secretions; and again, there are the experiments of Thudichum and Dupré, which go to show that, although alcohol will pass off in the free state by the urine when the body is, in plain language, supersaturated with it, yet that the quantity found in the urine, after certain large amounts taken, bears no proportion to the

amount that ought to be found if the whole were eliminated in the form in which it is taken, as alcohol. Dr. Thudichum's book in which he discusses this question, his report to the Medical Officer of the Privy Council, which I place before you, is such a model of industry, such a master-book in chemical physiology, that I would it were in the hands of every practitioner in the kingdom, and assuredly the part which refers to alcohol is deserving of special regard. For myself, I am satisfied that his facts are undeniable; but granting this, I am not so certain the inference from them, that alcohol is consumed, is, in every sense of the term, right. Dr. Thudichum himself shows that alcohol does pass off at a certain stage of intoxication, by the urine, as alcohol, and we may therefore all agree that such direct elimination is possible. But the whole is not accounted for by the finding; therefore some, a greater part, is consumed: that is the argument. Before, however, we can admit the argument, we must know how much common alcohol the body will hold—as a cask, we may say, would hold it—how much can be laid up and retained in combination with the water of the tissues, and how long a time must elapse before a given quantity of alcohol is actually removed from the tissues by the kidneys and other emunctories. When we consider the greed with which alcohol drinks water, I fear, the element of time for elimination being conceded, but little alcohol would be found lost as so much consumed. My reasoning is based on the phenomena of alcoholic intoxication. I can deduce from them no evidence at any stage of intoxication that there is increase of power in the organism. I admit in the first stage there is what is called excitement and a slight but brief increase of temperature; but that does not occur to me as being anything more than the result of local excitation, the effect of a local irritant on the extremities of nerve. This stimulation, or excitement of sensibility, is, I think, a natural sequence of the application of an irritant to structures in which there is a nervous expanse to receive impressions, and with this effect all evidence of stimulation, to say nothing of sustainment of power, ends. So soon as the alcohol makes its way into the organism and diffuses through the fluids, so soon there is depression, so soon respiration falls, carbonic acid gas from respiration decreases, and muscular strength, consciousness, and sensibility decline.

"Above all, against the idea of active combustion of alcohols in the body, is the overwhelming fact of reduction of temperature. Can an animal which is burning faster than it ought to burn grow colder than is natural, without the assistance of evaporation or other compensatory process?

"I am prepared, notwithstanding all this, to admit a certain oxidation of alcohol in the body. When the blood diluted with an alcohol brings round the weak spirit, in constant circuit, to the lungs, to expose it there to the air, it is next to impossible but that the same change will occur as would occur if the same diluted alcohol were exposed to air out of the body, a slow oxidation with an acid as a product. The free acid sweatings which follow a single alcoholic intoxication, the acid secretions from the intestines, the irritable condition of the heart, so like that which follows the injection of a soluble organic acid, all favor this view.

"I have dwelt on these points from their immediate relation to practice. The evidence of the physicians is not less conflicting than the

evidence of the physiologists. What shall we believe? Dr. Todd and his followers cure fever with alcohol. Dr. Gairdner, of Glasgow, treats fever with and without alcohol, and finds that he cures without better by far than with it. I will contest on neither side, because I know that as yet physicians have never prescribed alcoholic fluids with any precision at all, either in regard to quality or quantity, the common alcoholic drinks being anything; but I am prepared to contest, if under scientific administration alcohol be found to cure fever, that the medicine acts by lowering temperature and checking waste, not by sustaining as food sustains the body.

"The alcohols are strictly anæsthetics, and, indeed, the first published case of surgical operation under anæsthetic sleep was performed, in 1839, by Dr. Collier on a negro, who was rendered insensible by breathing the fumes of alcohol. But the anæsthesia is not commendable; it is too slow and too prolonged. Methylic alcohol, if it could be entirely purified and made inodorous, might be used, and with methylic ether it would be the safest of agents, but as yet its inhalation is disagreeable.

"The difference of action of the alcohols as they follow in their series and as the carbon increases is most striking. The slowness of action, the prolongation of action, step by step, from the lighter to the heavier compounds, is a fact as definite as any in physiology. Still more curious is it that neither the methylic nor the ethylic alcohols produce those tremors in the inferior animals which we recognize and especially name from their occurrence in man, while the butylic and the amylic most effectively call them forth. Considering how much of the heavier kind of alcohol is distributed for consumption, especially among the lower orders, I think it is possible that the heavier fluids may be the cause of delirium tremens in the human subject, as they probably are the cause of that continued coldness, lassitude, and depression which follow the well-known dinner with 'bad wine.'

"Speaking honestly, I cannot, by the argument yet presented to me, admit the alcohols through any gate that might distinguish them as apart from other chemical bodies. I can no more accept them as foods than I can chloroform, or ether, or methylal. That they produce a temporary excitement is true, but as their general action is quickly to reduce animal heat, I cannot see how they can supply animal force. I see clearly how they reduce animal power and can show a reason for using them in order to stop physical pain, or to stupefy mental pain; but that they give strength—*i.e.* that they supply material for construction of fine tissue, or throw force into tissues supplied by other material—must be an error as solemn as it is wide-spread.

"The true character of the alcohols is that they are agreeable temporary shrouds. The savage, with the mansions of his soul unfurnished, buries his restless energy under their shadow. The civilized man, overburdened with mental labor, or with engrossing care, seeks the same shade; but it is a shade after all in which, in exact proportion as he seeks it, the seeker retires from perfect natural life. To resort for force to alcohol is, to my mind, equivalent to the act of searching for the sun in subterranean gloom, until all is night.

"As yet alcohol, the most commonly summoned of accredited remedies, has never been properly tested to meet human diseases. I mean by this that it has never been tested as alcohol of a given chemical

composition, of a given purity, and in given measures. Wines, beers, and spirits are anythings—compounds of alcohols, and compounds of alcohols with ethers and other foreign substances. It is time, therefore, now for the learned to be precise respecting alcohol, and for the learned to learn the positive meaning of one of their most potent instruments for good or for evil, whereupon I think they will place the alcohol series in the position I have placed it, even though their prejudices in regard to it are, as mine are, by moderate habit, but confessed inconsistency, in its favor."

Absorption through the Skin promoted by Chloroform, etc. In his "Chronicle of Physiology" (*British and For. Med.-Chir. Review*), Dr. Henry Power gives the following abstract of "Some Observations respecting the Influence of Chloroform, etc., in Promoting Cutaneous Absorption," by Aug. Waller, M.D., F.R.S. (In *Practitioner*, November, 1869.)

"Dr. A. Waller states that his tests to prove that absorption had taken place were physiological, being principally obtained by observing the effect on the pupils, produced by the absorption of certain medicines, such as atropine, aconite, etc.

"He observes that it may be shown that the rapidity of absorption is, to a certain extent, connected with activity of the circulation, as is shown by the non-absorption of medicines from the intestinal canal during the latter stages of Asiatic cholera, and also by the interesting experiment of etherizing a frog, when it will be found that while before the action of ether, cyanide of potassium is readily absorbed by the skin, and is discoverable in the tongue or any part of the mucous membrane of the mouth, when the animal is subjected to the action of ether, and placed in the same condition, absorption is not found to occur; not so much from the absence of local absorption in the skin, as to the absence of vascular action, for the cyanide can still be detected on the inner surface of the skin exposed to its action, but from the deficient means of transport in the vessels around has remained localized and inert in the system. The chief obstacles to absorption in the human skin are the dry, condensed varnish of the cuticle, and the oily secretion of the sebaceous follicles, and these two causes are so efficient in preventing absorption that many physiologists still deny the power of the skin to introduce into the system any medicinal agent dissolved in water. 'If, however,' continues Dr. Waller, 'instead of employing aqueous solutions, we place various alkaloids dissolved in chloroform in contact with the skin, we quickly obtain evident symptoms of the absorption of these agents which may be carried to an extent sufficient to destroy life. When a mixture of equal parts of chloroform and tincture of aconite is maintained in contact with the human skin, it rapidly produces irritation and vascularization, which, after augmenting during the first two or three minutes, subsides gradually, and the part becomes pale and more or less insensible, with a local decrease of temperature; still later the part becomes insensible to the prick of a needle, though it still retains an imperfect sensibility when pressed upon. In fact, the part is in a state of superficial paralysis, which does not extend to the deeper lesions. This state of anæsthesia will continue for several hours.' Comparative trials showed that the anæsthetic effect was essentially due to the aconite. Besides these local effects of the absorption of aconite, there

frequently exist others resulting from its general influence on the system, namely, slight nausea and a sense of depression. Experiments on Albino rats, which consisted in maintaining one of the feet of the animal in a solution of atropine, and examining the pupil from time to time, showed clearly that little or no effect was produced even after half an hour's immersion, when the menstruum was alcohol or water; but with a solution of atropine in chloroform of one per cent. of the alkaloid, dilatation of the pupil was generally obtained in from two to five minutes. Similar results were obtained with a solution of equal parts of tincture of opium and chloroform. It is curious to notice, however, that the addition of alcohol to chloroform does not retard, but rather accelerates, absorption. The addition of astringents to a solution of atropine and chloroform has no influence in retarding the absorption of the atropine. It might, and indeed has been suggested, that chloroform acts by dissolving the sebaceous matter, and in consequence quickly penetrates through the skin, carrying with it the substance in solution. It is, however, impossible to accept this explanation, as alcohol likewise dissolves the sebaceous matter, yet alcoholic solutions remain unabsorbed after prolonged contact with the skin. Experiments were undertaken by Dr. Waller to examine the separate influence of chloroform and alcohol upon the skin, after death, to clear up this point, and these experiments showed that chloroform easily traverses dead skin by diffusion; that alcohol does not traverse the skin, but produces an endosmotic current with water; that skin exposed to chloroform in a state of liquid or vapor absorbs a considerable quantity of it; that on traversing the septal skin of the endosmometer, chloroform carries with it a certain amount of any alkaloid dissolved in it; phenomena which sufficiently explain the rapidity of cutaneous absorption during life, without our having recourse to any problematic influence of sebaceous matter on the surface of the skin."

—

Syphilitic Infection—Dr. Wm. W. Cable, of Pittsburg, communicates an instructive paper on this subject to the *Medical and Surgical Reporter*, from which we extract the following of special interest:

"I have selected syphilis as the subject of a short monograph, because of its prevalence, and the many opportunities I have had of studying its effects, both immediate and remote, on the animal economy, within the past fifteen years in the South and West. So rapid has been the increase in these diseases since the inauguration and close of the late civil war, that at least one-eighth of all the cases the practitioner is called upon to treat, in large towns and cities, are complicated with diseases of this character, and if there is not some system devised to prevent its spread and propagation, the next generation of Americans will occupy the unenviable position said to have been the condition of the English people in the 15th century, when the prevailing diseases of that country were 'Syphilis, Sycosis and Itch.' I do not propose to discuss the origin or antiquity of syphilitic disease, but simply to give some of the facts in regard to its peculiar effects that have come under my personal observation, and at the same time illustrative of the principles and theories in dispute among syphilographers.

"1st. The period of incubation—and the fact that syphilitic virus may remain enveloped and inactive in a *cicatrix* for a long period of time without giving rise to secondary symptoms.

"2d. The communicability of secondary syphilis.

"3d. The communicability of both primary and secondary syphilis to the lower animals.

"4th. Syphilis as a cumulative poison. * * * * *

"To illustrate the second proposition, I would state that I have at this time under treatment two persons who fully prove the communicability of secondary syphilis, by direct contact of mucous surfaces. A young man affected with secondary syphilis had intercourse with a country girl just commencing her career as 'a woman of the town' and in kissing her *introduced his tongue into her mouth.* She was subsequently affected with excavated ulcers of the tonsils and blotches on various parts of the body precisely like those on the person of the young man who had communicated the disease to her. After a careful and thorough examination of her person, I was unable to find any evidence of a primary affection. By a singular coincidence I was called upon shortly after to treat another young man affected in a similar manner, who attributed his condition to intercourse with the same girl. In his case there had been no primary sore—he also confessed to his having introduced his *tongue into her mouth* while caressing her. Not being altogether satisfied upon so important a chain of circumstances, I managed to get all the parties together, when I became convinced of the truth of their previous statements.

"On the third point—the communicability of both primary and secondary syphilis to the lower animals—I would state, that in 1849 I was cognizant of a case of primary syphilis in the dog. The circumstances of the case were as follows: A gentleman, the owner of a fine Newfoundland dog, boarded at a hotel that employed negro servants. One of these female domestics had contracted syphilis, and, as she afterward confessed, with the idea common among the vulgar, 'that to have a dog lick a sore would heal it,' she had enticed the dog to an outhouse where he had licked the sores on her person. The result was that the dog contracted a chancre in the mouth, and after having gone through the various stages of the disease, became so dangerous and disgusting from his friendly disposition, that his owner was compelled to destroy him.

"Another case was that of a puppy used to draw milk from the breast of a woman laboring under secondary syphilis with excoriation of the nipples. The puppy became affected with a papular eruption of the mucous membranes of the mouth and inflammation of the conjunctivæ—the hair fell off and the skin presented exactly the same appearance as that of the disease known to dog-fanciers as 'mange.' The puppy was destroyed and Meigs' breast-pump substituted in its place."

Syphilitic Infection.—Dr. Charles B. Taylor states that he (*Medical Press and Circular*) "could quote seventeen instances of contamination from syphilis from the employment of the Eustachian catheter."

"*Ulceration of the Palate in Young Patients.* (Under the care of Mr. Hutchinson, London Hospital.)—In November last, a stout, healthy-looking girl, eleven years of age, was under treatment in the surgical wards for ulceration at the back of the mouth, which resulted in destruction of the uvula and the adjacent soft parts. There was also an oval perforation in the soft palate. Mr. Hutchinson stated to his class that

as ulceration and destruction of the soft palate in an adult generally indicates tertiary syphilis, so does the existence of a similar disease in a young subject at once suggest the idea of hereditary syphilitic taint. But it has been observed that destruction of the palate at an early age is very rarely if ever associated with the signs of inherited syphilis. In the present patient the teeth were not deformed, there was no keratitis, and periosteal thickenings could not be detected. If, as we have good reasons for believing, early ulceration be due to hereditary syphilis, then this lesion characterizes a group of cases quite distinct from that in which the ordinary symptoms of inherited disease, such as pegged teeth and keratitis, are presented."—(*The Lancet.*)

"*India-Rubber Nursing Tubes a Cause of Sore Mouth.*—A correspondent writes us that he has found the india-rubber tube, so generally used upon nursing bottles, to be a cause of sore mouth in children, and describes a case where rapid recovery from a long and severe attack of sore mouth and throat in a nursing child resulted from the removal of the rubber tubes. He also calls attention to an extract from an English paper, which corroborates the opinion that such tubes are a source of sore mouth and throat in nursing children."—(*Sci. Amer.*)

Poisoning from a Dead Rattlesnake's Tooth.—"An artist, while sketching the picture of a dead rattlesnake, at the Sarbonne, in Paris, scratched his finger on the tooth of the reptile. He at once had the wound cauterized, and burned with a platinum wire. A squirrel was afterward wounded with the same tooth, in order to test its poisonous qualities. Within half an hour the animal died with the most fearful convulsions."—(*Schweiz. Wochenschr. f. Pharmacie* and *Pharmacist.*)

"*Toothache among the Ancients.*—One by one our illusions as to the 'good old times' vanish. Long had we cherished an idea that at least decayed teeth were unknown to our hardy ancestors, and were the peculiar privilege of our frivolous civilization. Mr. Mummery, in an able paper before the Odontological Society, has shown, however, that teeth were at times unsound even when the ancient inhabitants of the British Islands lived on coarse meal or the produce of the chase. Mr. Mummery has examined all the ancient skulls within his reach in order to determine this point. Beginning with the long-headed race, who are the earliest known human inhabitants, and who have been supposed to be of a Basque type, he found few instances of real decay, not many of wearing down, and none of dental irregularity among sixty-eight Wiltshire skulls; while among the round-headed skulls from the same county, supposed to belong to the later Belgic immigrants whom Cæsar found in possession of the southern part of the island, there were many more cases of caries, more also of wearing away, and some irregularity, which Mr. Mummery believes to be indicative of a coarse vegetable diet and scarcity of animal food. Oddly enough, in Yorkshire the skulls of the earlier or long-headed race exhibited many signs of dental disease, both caries, wear and tear, and signs of abscess. As for the Romans in Britain, the practice of burning their dead makes collecting of skulls by no means easy, yet out of 143 Britanno-Roman skulls 41 had carious teeth; irregularity and abscess were also common, but not wearing away. No traces of stopping or of artificial teeth

have been found. Among Egyptian skulls wearing of the teeth is very common, from the gritty, sandy character of the flour, and caries is by no means infrequent. There are no traces of stopping, and it seems that the art of dentistry was almost confined to the extraction of teeth. Mr. Mummery's conclusion is that dental disease is not the exclusive privilege of a high state of civilization."—(*Medical Times and Gazette.*)

Neuralgia.—"In a pamphlet entitled 'Irregularities of the Teeth,' by Mr. Henry Sewill, just published, the author says that, although by no means denying the existence of idiopathic neuralgia, he believes it is comparatively rare in London. There are hundreds of people walking about London this minute, the diseased nerves of whose carious teeth would be speedily roused into severe neuralgia by two or three nights of sleepless watching and anxiety, or by two or three days of insufficient nourishment, or of violent and exhausting exertion of body and mind, or body. And conversely, he is sure that a generous diet will often relieve the agony arising from sheer involvement of nerves in a cancerous deposit."—(*The Medical Press and Circular.*)

Extraction of Teeth under Chloral.—In a translated article (*Cincinnati Lancet and Observer*) from the *Bulletin de Thérapeutique*, Dr. Geo. E. Walton gives the following interesting case: "To a child of ten years that had a large, carious molar tooth, and had not slept in three nights, I gave thirty grains of hydrate of chloral. In a half hour, sleep being quite profound, I placed a wedge of wood between the dental arcades and removed the tooth, together with one of the canine teeth which was irregular in position. The child uttered no cries, neither gave evidence of pain other than carrying the hands to its mouth. He awoke shortly afterward, saying he had felt nothing, laughing to our satisfaction and appearing exceedingly happy that the tooth was gone."

"*Thymol: a New Disinfectant.*—M. Paquet proposes the use of thymol, so-called thymianic acid, the stearopten of the essential oil from *Ptycholis ajowan*, an umbelliferous plant growing in India. In undiluted state, this substance is a caustic, and used in dentistry for the cauterization of hollow teeth; its advantage in this aspect being that it has not an unpleasant taste, and, being very aromatic, does not affect the breath as carbolic acid does. Its aqueous solution is a strong antiseptic and possesses disinfectant properties in a very high degree."—(*Polytechnisches Jour.* and *Chem. News.*)

"*Blackened Teeth from Tea.*—We were lately consulted by a lady on account of discoloration of her teeth, which she supposed might be owing to some pills that we had prescribed for her. On investigation, the effect was traced to the tea used at the boarding-house, which was kept from day to day in a tinned vessel, and heated up at meal-times, with the addition of a fresh supply of the material. The tin having worn off, left a surface of iron, and the infusion, in cooling, acted chemically on the iron, making a tannate or gallate of iron. The boarders had been regaling themselves on *ink!* We are told that this is quite a common custom at boarding-houses and restaurants."—(*Pacific Med. and Surg. Jour*)

Amaurosis from Tobacco.—In a Report on the Progress of Ophthalmology, for 1867, Dr. G. Hay, of Boston, refers (*Med. Archives*) to "researches by Hutchinson, respecting a form of amaurosis, supposed to be due to tobacco; published in the Medico-Chirurgical Transactions. The subjective symptoms given are 'dimness of vision merely. Everything to him seems in a fog, but he has no pain in his eyes, nor any photophobia or photopsia. In many cases the patient becomes at length absolutely blind; but in others, the disease having advanced to a certain point is arrested. The different stages usually occupy from four months to a year.'

"The intrinsic pathological condition is atrophy of the optic nerve. Mr. Hutchinson observes: 'During the last three years I have held it to be a bounden duty to warn all who present the symptoms of this disease against smoking, and in only a few instances (provided the patient was seen early) did the disease afterward progress to blindness.' Mr. Wordsworth and Mr. Critchett are equally positive in their opinion in regard to the deleterious effects of tobacco, and state that 'much smoking is the ordinary cause of the atrophy.' Granting that a similar condition is occasioned by other causes, the former, before the Hunterian Society, 'declared that he believed he could with the ophthalmoscope pick out *smokers* from *non-smokers* in cases of optic nerve atrophy.' *Abstinence is the cure.* Mr. Critchett commits himself unhesitatingly to the opinion 'that although in many cases all medical treatment will be unavailing, yet the abandonment of tobacco will arrest the further progress of the disease.'"

"*Substances Eliminated in the Breath.*—'Will the Editors of the *Review* inform a youthful physiologist what substances, besides carbonic acid, are given forth in the breath, what name is applied to that organic substance which text-books describe as detected in the breath, and under what circumstances the breath passes luminous from the nostrils?'

"In answer to a 'youthful physiologist,' we desire to state that various substances besides carbonic acid are eliminated in the breath; such as chloride of sodium, nitrogen, hydrochlorate of ammonia, urate of soda, and urate of ammonia. In addition to these, the carbonate of ammonia is frequently, and carburetted hydrogen occasionally, found in the breath; the former derived from decomposing matter in or between the teeth, the latter from the blood, into which it has entered from the alimentary canal. But besides the matters just mentioned, many odorous substances may exist in the breath, such as alcohol, the volatile principles of garlic, onions, and spices, camphor, ethers, chloroform, musk, and many other medicinal substances.

"No specific name has been given to the organic matter found in the breath. It is known simply as 'the organic substance in expired air.' The substance in question is detected by passing expired air through strong sulphuric acid. It is albuminoid in constitution, has a fetid odor when accumulated in small and overcrowded rooms, and when allowed to putrefy, it becomes insufferably offensive. It has been suggested that this organic substance may be the medium or vehicle of certain contagions thrown off by the breath.

"As to the circumstances under which the breath passes luminous from the nostrils, we reply that, when 'phosphorus is dissolved in oil

and injected into the veins of an animal, it is given off by the lungs in some imperfectly oxidized state, so that the breath is luminous as it passes from the nostrils.'"—(*Amer. E. Med. Rev.*)

"*Secretory Nerve of the Parotid Gland.*—Professor Eckhard, in his recently published essays, gives a long paper upon the Secretory Nerves of the Parotid, and by a process of exclusion, as well as by direct experiment, he has satisfied himself that the secretory nerve of the parotid gland in dogs is the tympanic branch of the glosso-pharyngeal."—(*Lancet.*)

Neoplasms.—The *Medical Times and Gazette* says that "in his work on Dermoid Tumors, published in 1852, Lebert showed that the hair, teeth, bones, glands, etc. found in such tumors are not remnants of a fœtus, but are neoplasms. Concerning the formation of these neoplasmata, he has laid down what he calls the law of 'plastic hétérotopie,' by which any tissue or compound part of the body may become abnormally developed in places where they are not normally found."

Work of the Heart.—"The effect of everything that touches the heart is multiplied by the intensity of the heart's own changes. Hence it is that it is so sensitive, so true and quick an index of the body's state. Hence, also, it is that it never wearies. Let me remind you of the work done by our hearts in a day. A man's total outward work, his whole effect upon the world in twenty-four hours, has been reckoned about three hundred and fifty foot-tons. That may be taken as a good 'hard day's work.' During the same time, the heart has been working at the rate of one hundred and twenty foot-tons. That is to say, if all the pulses of a day and night could be concentrated and welded into one great throb, that throb would be enough to throw a ton of iron one hundred and twenty feet into the air. And yet the heart is never weary. Many of us are tired after but feeble labors; few of us can hold a poker out at arm's length without, after a few minutes, dropping it. But a healthy heart, and many an unsound heart, too—though sometimes you can tell in the evening, by its stroke, that it has been thrown off its balance by the turmoils and worries of life—goes on beating through the night when we are asleep, and when we wake in the morning, we find it at work, fresh as if it had only just began to beat. It does this because upon each stroke of work there follows a period, a brief but a real period of rest; because the next stroke which comes is but the natural sequence of that rest, and made to match it; because, in fact, each beat is, in force, in scope, in character, in everything, the simple expression of the heart's own energy and state."—(*Appleton's Journal* and *Nashville Journ. of Med. and Surg.*)

"*Microscopic Illumination.*—Dr. John Barker read an interesting paper on 'Microscopic Illumination' at a meeting of the Royal Irish Academy on the 10th inst. Dr. Barker truly describes the present defective manner of viewing microscopic objects by saying, that ordinarily on looking into a microscope we feel disposed to shrink from the sudden glare of light which strikes on the eye from the field of vision, which is flooded with intense light; the pupil contracts, and at first we see nothing at all; presently a something semi-transparent is rendered visible by the

relative opacity and transparency of its parts, and by the shadows they cast on the retina and on other portions of the object. Now, all these effects will not show us its true structure, but will rather contribute to a false impression of what is under examination. From such considerations as these, Dr. Barker concludes that axial illumination, in which a large portion of the central rays of light are stopped off, is the only one which ought to be admitted in microscopic research—a conclusion already arrived at by most of our best microscopists; but all have hitherto experienced a great difficulty in obtaining sufficient light, and of economizing the oblique rays (those most valuable), which are generally reflected to a large extent, and even dispersed at the under surface of the slide on which the object is placed. To obviate these difficulties, Dr. Barker makes use of the immersion plan, by placing between the slide and illuminator a film of water or oil; this gets rid of all, or almost all, the defects of former modes of illumination. This film acts as a medium, permitting rays of light, without sensible deviation or dispersion, to reach the object, and also allows all stage movements to be freely used. The light obtained in the manner indicated is almost purely achromatic, and is sufficiently oblique to give a black ground illumination with an eighth of an inch object-glass (immersion), and will show clearly the dotted structure of the lines on the pleurosygma formosum with a quarter inch object-glass, and with a two-thirds used binocularly the surface and interior of certain classes of objects are shown in a manner hitherto not seen. Dr Barker's first experiments were with a flat-topped paraboloid, and, after the meeting of the Academy broke up, the members had an opportunity of viewing with it a specimen of the conochολus volvox (a truly beautiful object)."—(*Med. Press and Circular.*)

Electric Bullet-probe and Extractor.—The *Amer. Artisan* states that "two French inventors have independently proposed methods of searching for and drawing out metallic missiles from wounds. Both men told their ideas to the French Institute at one and the same meeting during the past month. M. Trouvé was one; he who made the electrical jewels that delighted fashionable Paris for a few months two years ago. His new bullet-probe is a double-pointed needle, each point being connected by a wire with a little electric battery and a bell, which rings whenever the two needle points are united electrically; that is to say, whenever they both touch a piece of metal. With this divining-rod, bullet-searching is a simple business. The suspected part of the body is probed with it, and the instant the points touch lead the bell announces the fact. The bullet found, the worst half of the extractor's task is over. This plan was suggested by an Englishman, it is said, some two years ago, but not put to trial till M. Trouvé made an instrument. The other proposal is of more limited application. M. Melsens is its author, and he promises to draw fragments of iron or steel from a flesh wound by the help of powerful magnets. He can do nothing with lead, though, because it does not follow the loadstone. Trouvé's is the best idea. There is quaintness in the notion of a bullet telegraphing its whereabouts."

"*Cancer of the Tongue treated by Ligation of the Lingual Artery.*—Ligation of the artery supplying the diseased part in cases of elephantiasis, has been advocated and practiced successfully in several instances,

and the same plan has been advised in cases of simple inflammation of the extremities, synovitis of the knee and ankle-joints, tumors, etc. M. Demarquay has applied the same principle in the treatment of cancer of the tongue, having recently performed his ninth operation of the kind. The patient (*St. Louis Med. and Surg. Journal*), aged 40 years, was a man of regular habits, in whom a large ulcerated tumor of the tongue, of a year's standing, impaired deglutition and led to frequent hemorrhages, which enfeebled the health. The tumor being considered cancerous, M. Demarquay ligated the lingual artery. Next day it commenced to subside; in twenty-four hours the swelling around it had disappeared, and the pus secreted had lost its odor. In three weeks the health had greatly improved, the tumor was atrophied, and but a few drops of pus were secreted, though intermittent neuralgic pains of the face persisted. Nothing is said as to the result in the previous cases." —(*Pacific Med. and Surg. Journal.*)

—

"*Wiring of the Lower Jaw for Fracture.* (Service of Dr. Cheever, Boston City Hospital.) Reported by Geo. B. Stevens, House Surgeon.— A vertical fracture of the lower jaw, between the two middle incisors, was produced by the kick of a horse. During the four days following the injury, while the patient was in the hospital, numerous attempts were made to retain the fragments in apposition by means of wire carried around the teeth, by a gutta-percha splint moulded beneath the chin, and the same within the mouth over the teeth, but they were all unsuccessful, as the fragment on the left side could not be kept up on a line with the other. On the fifth day an operation for wiring was done by Dr. Cheever. The lower lip was drawn down, and, without any cutting of the soft parts, the jaw was drilled with the revolving chisel just below and a little to the outside of the alveolus of the lateral incisor on each side. Through the two holes thus made two pieces of stout copper wire, silver plated, were passed, and twisted on both the anterior and posterior surfaces of the jaw, as the wire was not sufficiently flexible to allow it to be introduced at one hole, turned on the inner side of the jaw, and then withdrawn through the other. The fragments were thus brought into firm apposition.

"Following the operation, the fragment on the left side was found to sink a little, but the deformity was more apparent than real, as the teeth were naturally irregular; the line of the gums was good. After the first ten days there was but trifling salivation.

"Though the plating entirely disappeared within the first week, the presence of the copper wire was borne with very little inconvenience, and with no toxicological effects, for thirty-three days, when it was removed. The fracture was then firmly united."—(*Boston Med. and Surg. Jour.*)

—

Carbolic Acid in Nicaragua.—A. Schiffmann (Valle-Menier, Nicaragua) writes to Dr. Quesneville, Paris (*Med. Times and Gaz.*): "At the commencement of 1867 the cholera began to spread rapidly in this country, and did not decline until it had decimated, during fifteen months, all the 'pueblos' one after the other.

"I wrote to M. Menier, who, always full of kindness toward us, sent me from England 600 bottles of liquid carbolic acid, with which I caused all the corridors and interiors of our houses to be watered every

day (in the proportion of a tumblerful of acid in a garden can of water), and we have had the happiness to be without a single case to deplore among our population, which is never less than 300, while at Nandaime, an Indian village half a league from the Valle-Menier, several inhabitants were every day interred.

"I do not know if I ought to attribute this result to the properties of carbolic acid which you praise so much, but what I am sure of is, that the period of my water coincides with that of the disappearance of intermittent fever, that dreadful scourge which attacks us four or five times yearly, and that all fleas, chiques, flies, etc., prolific vermin, which multiply indefinitely under our beautiful sun, have disappeared completely from here.

"One becomes quickly accustomed to the odor of this acid, which, after all, is an agreeable one; this is at least our experience here.

"In agriculture carbolic acid renders me great service by driving away a particular species of ants which lodges itself in the porous wood of the chocolate plant after the pruning of the trees.

"I mix a very small quantity with ochre ground in oil, and apply this odorous color with a brush, and the wound thus treated cicatrizes healthily and quickly.

"The odor of the acid drives away the ants, and the color permits the water to slip off, which would otherwise rot the tree, and leave a hole therein."

"*Drop Apparatus for Fluids.* MM. Alvergnat Frères. (*Revue Hebdomadaire de Chimie* and *Chem. News.*)—This contrivance consists essentially of a flat-bottomed glass flask, round the top portion of which a caoutchouc balloon has been so arranged that a glass tube bent downward outside of the flask, and reaching straight down to the bottom, passes air-tight through the balloon. When the latter is compressed, the air it contains forces the liquid in the flask upward; and this may be so managed as to cause it to flow drop by drop out of the bent tube."

Oxychloride of Magnesium Cement.—The *Boston Journ. of Chemistry* says a "new application of magnesia is Sorel's use of oxychloride of magnesium. A mixture of chloride of magnesium with magnesia, like the oxychloride of zinc previously made by Sorel, solidifies in a very short time, forming a hard, smooth, close-grained, white, slightly translucent, stony mass. When new mixed, it can be moulded like plaster of Paris. This mixture can be used to cement together sand and other materials to make building materials, which, it is claimed, can be made very cheaply. In the last Mechanics' Fair, we noticed houses, emery-wheels, building-blocks, and other articles made by a process of a similar character. The exhibitor informed us that his company owned Sorel's patents for this country, but he claimed that they had made certain improvements upon them. Their articles appeared very well, but how they will bear the test of actual use, time only will show."

"*Gas-tight Rubber Tubes.*—India-rubber tubing is slightly permeable to gas. As a fact, the amount which escapes through the walls of the tube is very small, but there are places in which it may be advisable to render any escape impossible. This can be done by giving the tubing a thin coating of a varnish made by dissolving one part and a half treacle

and two parts of gum arabic in seven parts of white wine and three and a half parts of strong alcohol. This is the receipt of M. Jouanne, but we have no doubt that beer may be substituted for white wine without harm. The treacle and gum must first be dissolved in the beer or wine, and the alcohol must be added very slowly, constantly stirring the mixture, or the gum will be thrown down."—(*Mech. Mag.* and *Scientific Journal.*)

Plaster of Paris Hardened.—"If ordinary calcined plaster be moistened with a saturated solution of alum, then dried, and afterward again calcined, at a red heat, it acquires the property of setting, when wet with water, with such hardness as almost to equal marble in this respect. It is possible that wetting the plaster with the aluminous solution before it is first calcined may answer an equally good purpose."—(*Phila. Ledger.*)

Cement for Iron.—"It may be convenient to know a ready method of closing up cracks, which are not uncommon, in cast-iron stoves; and we are assured that the following recipe is a reliable one. Good wood ashes are to be sifted through a fine sieve, to which is added the same quantity of clay, finely pulverized, together with a little salt. The mixture is to be moistened with water enough to make a paste, and the crack of the stove filled with it. This cement does not peel off or break away, and assumes an extreme degree of hardness after being heated. The stove must be cool when the application is made. The same substance may be used in setting in the plates of a stove, or in filling stove pipes, serving to render all the joints perfectly tight."—(*Ibid.*)

"*Glue which will unite Polished Steel.*—The following is a Turkish recipe for a cement used to fasten diamonds and other precious stones to metallic surfaces, and which is said to be capable of strongly uniting surfaces of polished steel, even when exposed to moisture. It is as follows: Dissolve five or six bits of gum mastic, each the size of a large pea, in as much spirits of wine as will suffice to render it liquid. In another vessel dissolve in brandy as much isinglass, previously softened in water, as will make a two-ounce vial of strong glue, adding two small bits of gum ammoniac, which must be rubbed until dissolved. Then mix the whole with heat. Keep in a vial closely stopped When it is to be used, set the vial in boiling water."—(*Druggists' Circular.*)

Tracing Paper made with Petroleum.—"Mr. Häusel, architect at Neustadt, Grand Duchy of Hessen, being once in need of tracing paper in a small village, where none could be obtained, thought of using, as a substitute, ordinary writing paper saturated with petroleum by means of a brush. The effect was a surprising success. It did not take him more than four or five minutes to paint a sheet of writing paper with petroleum and to wipe it off till it was dry. He thus obtained an excellent tracing paper, on which he could write and print just as easily as if it had not been treated with petroleum. Also drawing paper, when impregnated with petroleum, becomes sufficiently transparent to be used for tracings. Since Mr. Häusel made this discovery, he has never used any manufactured tracing paper, but has always preferred to use petro-

leum paper, which he can make himself at any time. He strongly recommends his method to all who can make use of it."—(*Sci. Amer.*)

—

"*Artificial Production of some Precious Stones.* (M. Gaudin.)—While presenting to the Museum of the Academy an exquisite collection of artificially-prepared precious stones, the author communicates some curious observations on the effect of a powerful oxyhydrogen blowpipe blast. Alumina, by itself, cannot serve for obtaining precious stones, owing to the tendency of this earth to devitrify again. It does not become pasty before fusing, but liquefies at once, and is as fluid as water; and next volatilizes as if it were camphor. In order to render alumina viscous, quartz has to be added; but that impairs the crystallization, and also the hardness. The coloration of the stones is another difficulty, since the enormously high temperature of the oxyhydrogen blast acts upon several substances, such as compounds of gold, silver, palladium, and other metals, in a manner quite different from that of a furnace fire. Copper is a protean substance in this aspect, and, by dexterous manipulations, may be used to produce many tints of color. Curiously enough, manganese and nickel yield, at this high temperature, an orange-yellow coloration; and chromium, exposed to the reducing flame, gives a sky-blue, and in the oxidizing flame, a deep-green, which is smoked (*enfumé*), as it were, and has not even a remote resemblance to emerald-green. This color can only be obtained by a special and very well directed oxidizing manipulation from oxide of copper."—(*Comptes Rendus* and *Chem. News.*)

—

"*Coloration of Glass under the Influence of Direct Sunlight.* (M. Bontemps.)—The author, who is the managing director of the celebrated crystal glass-works at Choisy de Roi, states, after referring to the observations on this subject made by the immortal Faraday, in 1824, and MM. Graffield and Pelouze, in 1863 and 1867, that his observations lead to the following results: Within three months after having been exposed to sunlight, the best and whitest glass made at St. Gobain is turned very distinctly yellow; extra-white glass (of peculiar mode of manufacture) has become even more yellow, and gradually assumes a color known as *pelure d'oignon;* glass containing five per cent. of litharge was also affected, but far less perceptibly; crystal-glass, made with carbonate of potassa (the other varieties referred to contain carbonate of soda), litharge, and silica, was not at all affected; English plate-glass, made by the British Plate-Glass Company, and exhibiting a distinctly azure-blue tinge, remained also unaffected. The author attributes this coloration, which begins with yellow and gradually turns to violet, passing through red *pelûre d'oignon*, to the oxidizing effects of the sun's rays upon the protoxides of iron and manganese contained in glass."—(*Ibid.*)

—

Heat in Artificial Light.—"The German chemist, Landsberg, says that artificial light contains 90 per cent of calorific rays, while sunlight contains only 50. To this difference he ascribes the disagreeable effect of artificial light upon the eyes. By passing the light through alum or mica, the calorific rays are intercepted, and this unpleasant effect is obviated."—(*Boston Journal of Chemistry.*)

THE

DENTAL COSMOS.

NEW SERIES.

VOL. XII. PHILADELPHIA, APRIL, 1870. No. 4.

ORIGINAL COMMUNICATIONS.

THE USE OF PLASTER OF PARIS FOR TAKING IMPRESSIONS OF THE MOUTH—ITS HISTORY AND IMPORTANCE, ETC.

BY. A. WESTCOTT, M.D., D.D.S., SYRACUSE, N. Y.,

FORMERLY PROFESSOR OF OPERATIVE AND MECHANICAL DENTISTRY IN THE BALTIMORE COLLEGE OF DENTAL SURGERY, AND LATE PROFESSOR IN THE NEW YORK COLLEGE OF DENTAL SURGERY.

It may be deemed unnecessary to give the natural history of a substance which comes to the hand of the dentist ready prepared for his use; and yet, in regard to a material of such great importance, and indeed so entirely indispensable, as is plaster, to every one attempting to practice mechanical dentistry, I think there is little danger of his knowing too much about it. Plaster of Paris is, in a measure, a manufactured article, and comes from the stone known as gypsum, which is composed of sulphuric acid 40 parts and lime 28 parts, and in the crystalline form, water 18 parts, or about one-fourth its weight. Gypsum is found in great abundance in nearly every part of the world, and is extensively used as a fertilizer; and when used for this purpose is finely ground, to render it more soluble, and is in this state known and sold as *plaster*. The term *Plaster of Paris* derives its name from the fact that one of the most extensive "plaster beds" known is in what is termed Paris Basin, near Paris.

Plaster of Paris, as it comes to us for dental, or other purposes, is prepared from gypsum by first grinding this mineral to a fine powder and then calcining, or, as the workmen say, "boiling" it. This process consists simply in heating this powder or *flour*, which it strongly resembles, in large caldrons, to drive off the water of crystallization, which constitutes, as above stated, about 25 per cent. of the whole weight, the escape of which through the mass gives rise to an agitation resembling *boiling*, and hence this term is used by the workmen to indicate this process.

Gypsum, beside being found mixed with many other minerals, such as mica, talc, steatite, black oxide of iron, iron pyrites, compact carbonate

of lime, etc., is found in a greater number of varieties, retaining the same chemical composition, than almost any other mineral. It is either in regular crystals, in which form it is called selenite, or in large crystalline plates and masses, which are perfectly transparent, and as pure as the finest plate-glass; or it occurs in fascicular or radiated masses, which are also crystallized; it is sometimes found in snow-white scaly flakes, like foam or snow; it is sometimes semi-transparent like horn, and lastly, it is met with most commonly in large, fine, or coarse-grained compact masses, forming rocks, and constituting large and extensive strata. In this last form it exhibits a great variety of colors—white, red, brown, *bluish-white*, etc. It is from this last variety that our plaster of Paris is principally derived.* Those varieties containing carbonate of lime, which some do to the extent of 12 per cent., are regarded by many as furnishing plaster superior to any variety of pure plaster, for the purposes of the artisan; and it is recommended by some writers to add this amount of quick lime to the plaster; but my own observations do not justify such a conclusion.

The great quality which renders plaster valuable to the dentist, and to stucco workers, model makers, etc., is its quality of "*setting*," by which is simply meant the rapid re-taking of the water of crystallization which had been driven off by heat, and the re-formation, to some extent, of the original stone from which it was made; and it is claimed that the harder the original plaster stone, the harder will be the set plaster made from it. This elimination of the water of crystallization is finely illustrated by heating alum upon an iron plate, when the latent fluid will escape so rapidly as to render the whole mass apparently fluid. When water is added to anhydrous plaster, its equivalent of water—about 25 per cent.—is solidified, and *heat is evolved*, in accordance with the general law that "whenever fluids are changed to solids heat is produced." If the exact equivalent of water were to be used in mixing plaster, the mass would become dry at once, or the entire water would be changed to the solid form. But in order to work plaster as is desirable, we must use a surplus of water, and are hence obliged subsequently to dry the work. The best method of "wetting up" plaster has been somewhat a matter of discussion, but for several reasons I have adopted the plan of taking about the amount of water desired, and stirring the plaster into it till of sufficient consistency. In this way we effect our object more rapidly, free it from air bubbles, and can bet-

---

*See Encyclopedia Americana—article, Plaster; Ure's Dictionary of Art and Science—article, Gypsum. Also a very valuable and well-written article by J. Carroll House, in the DENTAL COSMOS, vol. vii. pages 354–60, on "Dental Materials," in which is given very fully the *chemistry*, *geology*, *mineralogy*, *and uses of gypsum*. More articles of the same character would add greatly to our dental literature and science.

ter judge of the amount to be used to accomplish the purpose. If plaster is tardy in setting, the process will be greatly hastened by adding a small quantity of dry plaster, after having waited a sufficient time for it to set; this will take up the surplus water and effect the setting almost instantly. To expedite the setting of plaster, many different substances, dissolved in the water, have been recommended, such as salt, alum, soda, sulphate of potassa, etc. *Pure water, if used hot, or quite warm, will suffice, if the plaster is good and fresh*, and the work made is much harder and better than when *anything* is dissolved in the water. Common salt greatly enhances the rapidity of setting; but the models or casts are much more friable than when water only is used. Plaster rapidly absorbs water from the atmosphere, and hence it should be kept in a metallic, glass, or earthen vessel, perfectly covered, and in a dry room. It is indeed difficult to keep it for a great length of time and have it reliable.

Up to 1844 the use of plaster by the dentist was confined to the making of his models, by pouring it into the impressions of the mouth, taken with wax, or in combination with sand, for holding together his work while soldering.

Taking impressions of the mouth with plaster was (so far as I am aware) first attempted in March, 1844,—or about *twenty-six years ago*. At this time Dr. E. J. Dunning and myself were partners in business, at Syracuse, and as full of enthusiasm as if we believed the philosopher's stone within our easy reach. Dr. D. had previously done some dental business in Montrose, Pa., and returned there at the time above indicated to fulfill some other engagements. While there he undertook a case of plate work, which I leave him, in his own language, to describe. In a letter from him, dated January 10, 1870, in reply to a request from me to give his recollections of the origin of this practice, he says: "It was in the winter of 1843-4. I was at Montrose, Pa., attending to some professional engagements. I had previously undertaken to make a set of teeth for an old gentleman, with very poor success. The upper jaw—all of the teeth having been removed years before—had been reduced by absorption to its minimum size. It was very small and very flat, and, what was worse, had two flabby and easily moved masses of tissue in the palatine arch. I had made several trials with wax impressions, but could never succeed in obtaining a correct cast on account of the moving of these bags, under the slightest pressure. In those days, you know, we hated to give up a case and acknowledge ourselves unable to conquer it. Such a result seemed inevitable. I thought of the case all day, and finally arrived at the stage of dreaming of it. Early one morning the idea of using *plaster* suggested itself to me, and after a little thinking over the 'modus operandi,' I became satisfied that a valuable resource in this case, and perhaps in others,

had been devised. The relief from my special dilemma was so great that I danced round my room for joy, and when ——— (a student) came in, I think my demeanor must have been more amusing than dignified. I think *I remember brandishing the poker around his head!* Well, this is all I know of the origin of taking plaster impressions. I obtained a better cast of old Mr. ———'s mouth than I had before had, but I doubt if, after all, the teeth answered. I do not doubt but you have made the process of taking plaster impressions so different from my first clumsy experiment, that I should fail to recognize it, except in idea. Very soon afterward I left for New York, and have since devoted my time *exclusively* to the chair."

The above letter from Dr. Dunning is very satisfactory, as it fully confirms my own recollections upon the subject.

Very soon after Dr. D. left, I encountered a very different case from the one described by him, though one in which I found it wholly impossible to get a correct impression with wax. It was one of those flaring, or bell-shaped mouths, and very deep. The great difficulty was in *removing* the wax from the mouth without materially altering its shape. In this case I tried *plaster*, with perfect success; and, although all of the plaster reaching above the most prominent portion, especially in front, broke away in removing the impression, I was enabled so to reunite the fragments as to be certain that the mended impression was correct, and though I did not "brandish a poker," I lost no time in carrying out the joke in a more practical way. An old man, who was very poor, and wholly toothless, had often expressed to me a desire to have a set of teeth, but was unable to pay for them. I immediately sought him out, and told him that I was desirous of testing a new method of taking impressions of the mouth, and if he would allow me to take as many impressions of his mouth as I might choose, I would make him a set of teeth in exchange for his trouble.

To this he most cheerfully agreed, and in thinking of the transaction since, I have been at a loss as to who was best paid for his services. I have some qualms of conscience, however, when I reflect that I kept this poor old fellow "under this harrow" for some six weeks, taking from one to six impressions daily, and only made him "a silver case" in return for all his trouble and mouth-stretching. In these experiments I endeavored to test every question that my then state of knowledge could suggest. From that day to the present I have not taken an impression for a full set with any other material; and for the last fifteen years, I have used plaster mainly in mixed cases, or where there were more or less teeth left in the mouth.

The experiments to which I have alluded were performed, I think, in May and June, 1844. At the meeting of the American Society, which was held in August following, I brought up this subject, and recollect

very distinctly discussing it with Professor Chapin A. Harris, to whom it was then entirely new. Finding difficulty in getting my models out of the sand, in making my dies for cases like the one first above named, where the alveolar ridge was flaring, I resorted to "sectional models," such as are described in Harris' work (5th edition, pages 641–2). Dr. H., after describing these cuts, adds: "Dr. Westcott, *we believe*, was the first to introduce the use of this description of plaster models," etc. Why he should use the expression, "*we believe*," I have never been able to learn, as the very cuts in question were made from models which I prepared with my own hands, and I supervised the making of the *cuts* for him in 1847, and at his own request. Again in his Dictionary (page 385, article "Impressions of the Mouth in Plaster of Paris") he says: "Drs. Westcott and Dunning, *it is believed*, were the first to employ this method of taking impressions in this way." This edition of his Dictionary, I simply add, was published in 1849. Leaving the *history* of this matter to take care of itself, I now come to the practical questions involved in this method of impression-taking.

Why plaster has been resorted to for this purpose, has perhaps already been sufficiently indicated Does plaster fully meet every desideratum involved in this fundamental operation? I answer most emphatically, yes. When plaster is properly treated and manipulated, *we may always get a perfect fac-simile of the mouth*, so far as size and shape is concerned. "But," asks one (and a good many), "don't it expand in hardening or setting?" "And is not this what raises the deuce with my plates, causing some of them to work like an inverted cradle?" Let me say to such: if your plates rock, *it is not from the expansion of the plaster*. If your plates fail to fit *perfectly*, you must look for something besides the expansion of plaster for the cause of the difficulty. If plaster is properly prepared, it does not expand the least iota. Having read numerous articles in the dental journals, from men of reputation and standing, and having constantly heard it *talked* in this way, I had very naturally fallen into the belief that the expansion of plaster was a very grave evil, as connected with impression-taking or model-making; but a series of carefully-conducted experiments has convinced me that this has been simply the "scape-goat to bear into the wilderness the sins" of ignorance or faulty manipulations. I shall only give a summary of these experiments, sufficient to show their practical results. To the questions, Does plaster expand in setting, and under what circumstances? I answer:

1st. *Plaster mixed with pure water does expand about $\frac{1}{500}$ part of its own lineal measure.* To test this thoroughly the experiment was tried in several ways. My partner, Dr. T. S. Hitchcock, at my suggestion and under my direction, prepared a trough of tin, about one and a half inches in diameter, and *two feet* in length, and closed one end by sol-

dering a piece of tin over it, leaving the other end open; we then, after oiling the inside thoroughly, filled the tube or trough with plaster, mixed with pure water, and, as soon as it ceased to flow, struck across the open end with a plane surface, so as to bring the plaster exactly even with this open end. After letting the plaster stand an hour or so, we found that the plaster projected beyond the open end of the trough about $\frac{1}{20}$ of an inch, or, the trough being 24 inches long, $\frac{1}{480}$ of its own measure. We next tried the experiment by filling a strong glass tube, $\frac{1}{8}$ of an inch thick, and nearly 2 feet long, and $1\frac{1}{4}$ inches calibre. In a very short period the expansion burst this tube longitudinally, making two complete and nearly equal troughs of it.

2d. *Plaster mixed with salt and water at the temperature of* 120° *or* 130° *does not expand in setting.* To test this, we repeated the experiments as above described—first, putting the plaster into the tin trough; and next, by filling a similar tube with the plaster thus mixed, cutting it off evenly at each end as soon as it ceased to be fluid.

It is now some weeks since these experiments were tried, and the length of the plaster and tin trough are to-day exactly equal, and the glass tube remains unaffected. Subsequent to performing these experiments as above stated, we filled a plain glass tumbler, of nearly parallel sides, which was full 3 inches diameter and 4 inches deep, with plaster, prepared in the same way, *i.e.* with salted water, and even this large bulk has not cracked, or in any way affected the tumbler, which would have been true if there was the slightest expansion, and had the glass been an inch thick. We also tried other substances with water, the result of which it is not essential to give, as salt exactly meets the end, and is not unpleasant to the taste—being, moreover, always at hand. We used a heaped teaspoonful of salt to one pint of water. There is no objection whatever to using salt for this purpose in the plaster for taking *impressions*. The friableness imparted to the plaster by the use of salt is advantageous rather, as it enables us to remove more easily the impression from the model poured into it, in consequence of its being softer than the model. Nor would the expansion of plaster, when wet up with *pure water*, amount to anything *practically*. It would be $\frac{1}{200}$ of an inch in an impression of $2\frac{1}{2}$ inches diameter; and this, in practice, could be safely disregarded. It certainly does not produce the *rocking* alluded to.

What then is the trouble? The first question which forced itself upon my attention for a solution, and particularly after I could not charge it to the expansion of the plaster, was, *What effect does the vulcanizing have upon the rubber?* After repeated tests, I am now enabled to answer that *rubber always contracts or shrinks in vulcanizing.* Operators sometimes take two impressions and prepare two models—vulcanizing over one model, and using the other to test the correctness

of the plate. This would be a correct test were he sure that both impressions were exactly alike; but of this he can never be certain; so that notwithstanding his plate may not fit the second model, it still would leave him in the dark as to the origin of the discrepancy. To dispose of this difficulty, we prepared a firm metallic form, to represent a section of the mouth, so that two, or any number of impressions from it, would exactly correspond. If the piece did not change in the process of vulcanizing, it must fit any one of the models after it was vulcanized. After repeated trials, we found that in every case the rubber did shrink or contract about as shown in the following cut, which accurately represents the result.

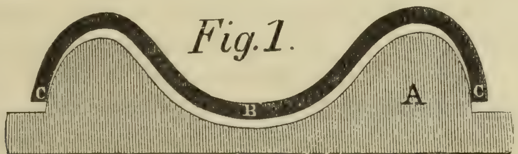


Fig.1.

It is quite apparent from this representation that it would be very *desirable* to have the plaster *expand* in setting, as, if such expansion should be exactly equal to the contraction of the rubber, the plate would accurately fit the mouth. It follows that the *model* which is made from the impression should be made by using pure water with the plaster. But whence, then, comes the rocking difficulty? I answer—*always* from faulty manipulations. This conclusion hardly needs more proof than is found in the fact, that operators who meet with this result, by repeating their operations with the same rubber, the same plaster, and in short with surroundings all the same, *except a new impression*, succeed in producing a plate fitting with the utmost accuracy. All other considerations aside, can there be any other reason for the changed result except that he has succeeded in getting an accurate impression in the latter case, while in the former it was a *rocking impression?* This brings me to the question, which is the real gist of my subject, viz: Is it possible to take accurate impressions with plaster in all cases, and if so, how is it to be done? I answer, that this operation may be reduced to as much certainty as pertains to any other dental operation, by observing a few simple and common-sense rules.

The main difficulty in taking impressions with plaster consists in the fact, that the material used is a *semi-fluid*, and hence is not capable of imparting to the hand sufficient sensation to govern the movements of the operator, or to indicate to him precisely what he is doing. He is therefore liable to imperceptible movements, of which he is neither warned nor advised by any resistance of the material used. To obviate this difficulty, I uniformly take a wax impression as a preliminary step, and with as much care as if I expected to use it to form the model.

This wax, when quite cold, I carve with knives curved laterally, and with bent gouges, with great care, as follows: after deciding as to the proper form and size of the impression, and in a general way trimming off all the wax which is not needed, I make a cut in the wax one-eighth of an inch deep, on the inside of the impression, and about one-eighth of an inch from the margin. This cut follows the entire margin of the wax impression, and across the palatine portion. I now carve out the entire surface of the wax to the depth of from one-eighth to one-quarter of an inch, except a narrow strip, perhaps one-quarter of an inch wide at the extreme front, and at the place of greatest depression in the wax. When this impression is replaced in the mouth, it rests firmly upon the unchanged strip running across the rear end of the palatine arch, and at the same time bears upon the uncarved strip at the front of the impression. The impression, after it is carved ready for the plaster, is represented in Fig. 2, in which B represents the carved portion, and *c c c* the line or portion of the wax left uncarved, or as it was formed by the mouth.

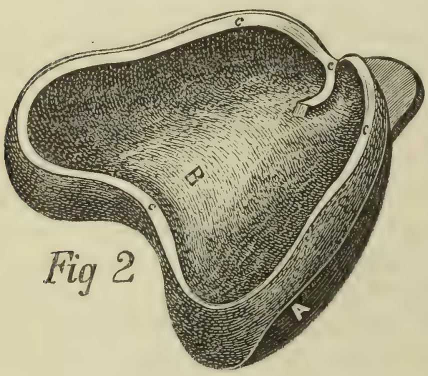


Fig 2

I hardly need say that an impression having these resting-points could be held steady, from pressure bearing upward against the centre of the impression cup, nor that it might be steadily held there a time sufficient for the plaster to set—even in spite of the patient. But without some fixed resting-points against which the cup containing this semi-fluid mass may be carried and held, I regard the chances wholly against getting a perfect impression. By such prearrangements you will be able to use the plaster paste comparatively thin, which I regard as very desirable, if not absolutely indispensable.

Under the conviction that it may be more definitely governed by the hand, and the feeling that it is desirable to have the plaster in the mouth as little time as possible, I am satisfied that operators too often use the plaster paste too thick, or, what is much worse, after it begins to thicken by setting. In either case, and especially if a simple impression cup without wax is used, a rocking impression is almost inevitable. The broad and sometimes nearly flat surface of the impression cup compresses the plaster immediately above it, causing the central portion to harden soonest, thus forming a pivot or fulcrum, over which the impression is easily rocked or tilted. This result is effected by the surplus water being squeezed out of the centre plaster, and is imparted to that forced to the sides of the impression.

Any one desiring to test the truth of this position can do so in the following very simple way: Take a glass tumbler of nearly parallel sides, and prepare a follower or piston, fitting it loosely—say leaving $\frac{1}{8}$ of an inch on every side; fill the tumbler two thirds full of plaster, wet to a proper consistency, and when the first appearance of setting is observed, attempt to carry the piston through the plaster to the bottom of the tumbler. I have tried the experiment repeatedly, and unless the plaster was quite thin, and had not begun to set, I could not get the piston more than two-thirds or three-fourths through the mass, in consequence of its hardening between the end of the piston and the bottom of the tumbler. In taking an impression, should we *first* put the plaster into the mouth, the impression cup becomes the piston. But this would not alter the result. The practical rules to be derived from the above facts and consideration are these:

1st. Plaster paste should be made and used thin.

2d. As little plaster as possible should be used.

3d. It should not commence setting before put into the mouth.

4th. The plaster should be as nearly as possible of even thickness over the entire surface, or *the impression cup should be shaped by the mouth itself.*

5th. In taking the *impression*, salt should be used in the water to mix the plaster.

6th. In making the *model*, the plaster should be wet up with pure water, whether to be used in vulcanite work, or for metallic plates; there is no danger of the plaster expanding too much—the expansion will always be less than the shrinkage of vulcanite, or of a zinc die. Something of success will depend upon outside arrangements.

The chair for your patient should not be much higher than that of an ordinary chair. The patient during the operation should sit erect and in a way to lean forward instantly, when directed to do so by the operator. An assistant should always be in attendance if possible. After all is ready, carry the cup containing the plaster to its position by first raising the back of the cup so that the strip of wax constituting its rear boundary is first brought firmly against the palatine arch; then, with the end of the fore or middle finger of the left hand applied to the centre of the cup, press gently upward, while a *lateral shaking* motion is kept up by the operator upon the handle of the cup with the right hand. During this process the patient is directed to *lean forward*, that any surplus plaster may flow out of a depression in the rim of the cup or wax, which should always be made just above the handle of the cup.

After the plaster ceases to be fluid, the patient may assume the erect or any other position most comfortable or convenient. If the impression is a perfect one, it may be a difficult matter to remove it. This may generally be overcome by pressing forcibly upward the lip,

and at the same time bearing down upon the cup. If the mouth is a flaring one, I should recommend the use of such cups as I am about to describe, for taking impressions when more or less of the teeth have not been extracted, in which case the plaster is broken, and is removed in two or more sections. It is thought by many impracticable to take *plaster impressions* except the jaw is clear of teeth, while the truth is, these mixed cases are the very ones most requiring such impressions. For many years I have confined my impression-taking almost exclusively to this material, whether for one tooth or a full set. A similar view of this subject is expressed in the following quotation from a letter recently received from Dr. Norman W. Kingsley, of New York. He says: "In my association with the profession I have found the practice almost universal to use *plaster* only in cases where there were no teeth in the jaw. For making full pieces for either upper or under jaw, plaster would be used for the impression; but for partial sets, wax, gutta-percha, or other similar plastic material would be substituted." He adds: "Now, I regard the bare gum as being the only case where *wax* is admissible. When there are straggling teeth, deep under-cuts, or peculiarities of any form, plaster is the only feasible means of obtaining an accurate impression of the parts." Again, he says: "The main points to be observed being the use of a cup which will not come away and leave the plaster in the mouth, and the removal of the mass the instant it will fracture, which can be told by what remains in the vessel in which it was prepared." Now, what Dr. Kingsley may do with his great experience and extraordinary dexterity of hand, all may not so readily accomplish, and I shall therefore conclude this paper by more fully pointing out some of the difficulties incident to *taking impressions with plaster, where more or less of the teeth remain in the mouth.* A Paddy who had met with a severe Irish hoist, said his "*falling* did not hurt him, but 'twas the stopping so quick" that did the mischief. A tyro may *get* a good impression of such a mouth, but it will require an expert to preserve it for use, with any means which I have seen described. The problems to be solved are:

1st. *When* shall it be removed from the mouth?

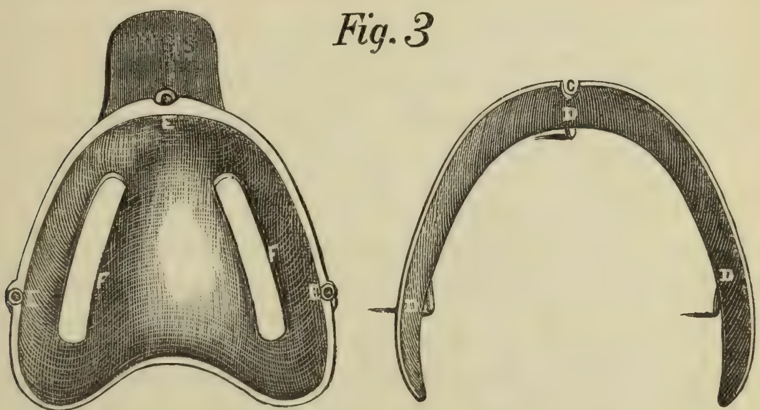
2d. *How can this be done* so as to secure with certainty the pieces (for it of course must be broken) of such size and form that they may be easily restored to their proper places to make up the impression as it was before it was broken?

The former of these questions has been answered by Dr. Kingsley in the quotation above, by saying that "it should be removed as soon as it (the plaster) will fracture." It may be left in the mouth somewhat longer than this expression would indicate, by using a cup represented in Fig. 3, and which I shall presently describe.

The place where it is desirable to have the plaster break, and, indeed,

where it will most easily break, is on a line with the ends of the teeth; so that, when the lower portion of the impression cup is withdrawn from the mouth, it shall contain the impression of all of the mouth

Fig. 3



inside the teeth, and also an impression of the palatine side of the teeth themselves—leaving the plaster, which flowed to the outside of the teeth, to be removed afterward, and replaced after all is out of the mouth.

To secure this object, the impression cup is made in two parts—the rim D D D, Fig. 3, is separate, or detachable from the body of the cup. Such a cup may be easily prepared from the ordinary cup, made and sold by S. S. White, by sawing off the rim with a fine saw, and again coupling it with the palatine portion by brass dowels. Take the rim and solder on to it three short pieces of brass wire—one on the front and one on each side of the rim, as at D D D. Next, solder on three short pieces of brass tubing, represented at E E E, corresponding in position and in size of hole with the wire dowels already soldered on to the rim. By this arrangement we are enabled to remove and replace the rim at pleasure.

As it is very desirable to bring away the wax and plaster with the palatine portion of the cup, provision must be made against the cleavage of the wax from the cup. This may be done by holding the cup over a spirit-lamp, and securing an adhesion by melting the wax; but a much easier way is to perforate the base of the cup, as seen at F F, Fig. 3. In taking the wax impression preliminary to the plaster impression, the wax will press through these orifices more or less, and by spreading it out like the heading of a rivet on the bottom of the cup, we have a strong and secure holding when the wax is cold.

These orifices will be found a convenience in any case of plaster impression-taking. When the two parts of the cup are placed together, so

as to form a cup of the usual form, and the wax impression taken, and curved, as above described, I then pass a thin blade through the seam or joining, and separate the wax so that both rim and wax may be easily taken from the lower or palatine portion of the cup. In this way we may insure the separating of the two parts on this line, leaving all, both plaster and wax, within the rim in the mouth, while the palatine portion is removed. To remove the portion embraced within the rim easily, and without unnecessary crumbling, spring off first one end of the rim and then the other, and remove the rim from the mouth. Then, by a thin, though not sharp, knife, or firm spatula, divide the plaster which is still in the mouth and outside the teeth, into three sections, which may generally be removed without breaking it elsewhere, and in a way that the pieces may be readily returned to their proper places. There may be *cut-offs* of wax placed where we desire the plaster to separate, so that the sections are very easily removed. These cut-offs consist simply of thin plates of wax set up edgewise, so as to divide the plaster while thin into any number of sections, and reach from the rim of the cup to the teeth or gum.

In taking an impression where there are teeth and spaces of naked gum between them, and especially where the teeth are bell-crowned, it is well to set up thin slips of wax from tooth to tooth, or else leave such cut-offs, when curving the wax, to make room for the plaster. In taking impressions for partial sets, there is not the same necessity for providing against the rocking of the impression cup, as the depressions made by the teeth in the wax are not obliterated by the curving, and these will serve as the steadying points when the wax is returned with the plaster for the final impression. By carrying out these suggestions, we may have no more difficulty in getting a perfect impression of *every part* in mixed cases than pertains to full sets where the gums are entirely naked.

The evils arising from the rapid solidification of the plaster in the roof of the mouth may, with a good degree of certainty, be overcome by using it of equal depth or thickness—using the smallest quantity which will answer the purpose, and leaving the plaster paste *thin*, i.e. as nearly fluid as it can well be worked. To meet this difficulty more perfectly still, I am inclined to try a cup with an elastic base or bottom, which I have not yet tried. If the bottom of an impression cup were made of elastic rubber, so as to yield sufficiently to allow the points left on the wax impression always to be carried fully up to the gum, I am inclined to the opinion that it might secure this very desirable object. I have intended to try such an arrangement, but have not yet found it convenient to do. I hope some one who has more leisure than I have may institute some experiments based upon this suggestion.

If it is thought by any one that I have pointed out too many precau-

tions—that they involve too much time and painstaking—I have simply to reply, that whoever is satisfied with less, must also be satisfied with *uncertain*, if not faulty, results.

PHYSIOLOGICAL ACTION OF NITROUS OXIDE GAS.

BY THOMAS W. EVANS, M.D., D.D.S., PARIS, FRANCE.

(Continued from vol. xi. p. 458.)

THAT the nervous system should first yield to the dynamic influence of anæsthetics is not remarkable; indeed it is precisely what we should have predicated, from a knowledge of its relation to the several histological elements of organized being.

A nervous system is not a necessary condition of animal life, but appears in the course of the differentiation of structure, which takes place in the organic series in ascending from the lower forms of life. It is a result of the operation of the law which Mr. Milne-Edwards has announced as the law of the division of physiological labor,—the principle, in accordance with which in the process of evolution functions are specialized and localized, for their more complete and perfect accomplishment,—or it is a result of that more general law, which Mr. Herbert Spencer has expressed, in affirming the inherent tendency of matter to rise from the simple and comparatively stable forms to the complex and comparatively unstable forms. As we find in chemistry that the binary compounds are more stable than the ternary, and the ternary than the quaternary, so the less differentiated organisms and tissues are more stable than the more highly differentiated structures.

Not only is this true in general, but direct experiments teach us that the nervous system itself is sensitive to destructive forces just in proportion to the rank the animal holds in the zoological series, and that the persistence of the special excitability of the nervous tissue after death is the greater as the animal is lower in the zoological series.

But it is not my purpose to follow this particular line of inquiry further, as we are led by it from a consideration of the positive facts of physiology proper to the induction, more or less reasonable, of philosophical speculation, and may be carried by it too near to that dim frontier which now separates the known from the unknown, and where there is constant danger of mistaking the unreal for the real.

The evidence at present obtained seems, however, to be sufficient to establish the general proposition—that the direct action of anæsthetics upon the animal organism is not limited to the blood, but that it affects the cellular elements of the nervous system, and includes as well

—by establishing new relations between those purely physical and dynamic forces which determine the processes of development wherever the basis of life exists—a final metamorphosis, or arrest of each organic function.

I have elsewhere said that the first effect of the inhalation of nitrous oxide upon the nervous system was manifested by an increased action of that system. The nerve-cells everywhere respond to the presence of the gas, by assuming an electro-dynamic state, and by rapidly discharging the energies which may have previously been stored up in them. Nitrous oxide is a diffusible stimulant, and the range of its action is as wide as the distribution of the nervous elements themselves.

The primary action of all the generally recognized anæsthetics is substantially the same,—they act as general stimulants upon the cerebrum, upon the cranio-spinal axis, and upon the nerves of organic life. Intellect, emotion, and sensation are quickened; muscular force is augmented, and the functions—respiration, circulation, assimilation, secretion, and disassimilation, are all more rapidly fulfilled.

If nitrous oxide stimulates the brain, so do ether and alcohol. If nitrous oxide accelerates the heart's action, so does amylene. If nitrous oxide notably augments the mucous and salivary secretions and the urinary excretion, ether and alcohol are equally efficient in producing these effects.

Each of these agents doubtless accomplishes its work in a way more or less peculiar to itself, and may give rise to certain phenomena, objective as well as subjective, which are sufficiently distinctive. Thus, ether not only exerts upon the heart a more decidedly stimulant action than chloroform, but the "stage" of cerebral excitement produced by it is more prolonged as well as more constantly present. The stimulant action of amylene upon the cerebrum, if it more closely resembles that of nitrous oxide in its intensity, as also in its transient character, is more likely to be followed by symptoms of nervous exhaustion, headache, and malaise. Nitrous oxide may affect the action of the heart less than chloroform, and the ideational nervous centres more than chloroform. So, whoever is familiar with the action of fermented liquors has observed that some seem to render the intellectual faculties obtuse, or to provoke a condition of moroseness and irritability, while others containing the same amount of absolute alcohol, would rather appear to sharpen the intellect, warm the imagination, and awaken the more generous sentiments of our moral nature.

Still, it should be observed that there is a marked difference between the action of true anæsthetics and that consequent upon the administration of most of the narcotics, and this difference, let me say, may be entirely independent of the mode of administration. The specific effects of aconite, atropia, camphor, coffee, opium, and many other substances

upon the nervous centres, are unequivocal. Each determines, however, a special and characteristic series of nervous phenomena, produced by a peculiar local and elective action of the substance upon the nervous elements. The brain, the cranio-spinal axis, and the sympathetic system, the gray matter, and the tubular matter, are independently stimulated or narcotized, and the result is a complete disaccord in the sequence of the phenomena which these narcotics may severally occasion. It is of this class of substances that M. Claude Bernard has truly and forcibly said, "They effect a sort of physiological dissection of the organism." Anæsthetics, on the other hand, have the common property of acting as general stimulants, and of producing nearly parallel and uniform effects; and this parallelism obtains not only between their primary stimulant effects, but is again revealed in their secondary narcotic action, which, as we have seen, uniformly falls most immediately and heavily upon the centres of sensation. Indeed, there is no ground for believing, in view of the slight differences observable in the action upon the animal functions of the several anæsthetics now employed, that as regards the general phenomena which they induce, the action of each upon these functions is not essentially the same, or that any influence they may exert upon the manifestation of the more purely psychical functions, is differentiated by the peculiar elective affinities of each agent for the seat of some special moral or intellectual attribute. Let me be understood here distinctly. Anæsthetics act directly or specifically upon the nervous elements, as I have endeavored elsewhere to show, but, *as a rule, they all act upon these elements in the same way;* while narcotics in general act directly and specifically upon the nervous elements, but, *as a rule, they do not act upon these elements in the same way.*

Each anæsthetic acts first as a general stimulant. Each anæsthetic acts finally as a general narcotic—and if differences may be detected in the direction or force of the organic movements which they severally excite, particularly in the intermediate stages, they must be attributed to differences attending the manner in which the agent reaches the nervous centres, rather than to elective affinities peculiar to the agent itself. The mode of administration has much to do with the character of the phenomena produced. Thus, ether acts primarily upon the nervous centres as a stimulant, when employed *convenablement,* in such a way as shall fairly test its properties. But when introduced into the stomach it often gives rise to a series of phenomena, in virtue of its physical and chemical characteristics, which mask entirely its general and specific action on the nervous centres. When given in this way to animals (rabbits, etc.) who do not possess the power of regurgitation, it may evolve itself so rapidly in vapor as to distend the stomach to a degree such that respiration becomes impossible, and the animal dies of suffoca-

tion. The stomach may even be ruptured by the distention, or it may act as a powerful local irritant or caustic upon the gastro-intestinal mucous surfaces. When injected directly into the circulation, it produces also a caustic effect, coagulates the blood in the capillaries, abolishes *motricité* while sensibility still remains, and in short, according to Flourens, acts precisely as many other irritants and caustics when employed in a similar manner. These local effects of ether may not only conceal its more general action, but they may so interfere with the processes of absorption as to render it impossible to graduate either the rapidity or the extent of its influence upon the nervous centres. And yet no one can for a moment doubt but that ether, through whatever channel it may enter into the blood, has one and the same action on the nervous centres—that it acts primarily as a stimulant, secondarily as a narcotic; as a narcotic, firstly, upon the sensitive elements of the nervous system, and lastly, upon the motor elements of that system. So the effects of chloroform, when introduced into the stomach, are not identical with those produced by the inhalation of its vapor. Taken by the stomach, chloroform acts rather as a sedative and hypnotic than as a powerful nervous stimulant; while its special anæsthetic properties are often so obscured by the apparition of grave local or constitutional disturbances as to escape the notice of the observer. Lallemand, Perrin, and Duroy have even denied that chloroform possessed the power of producing anæsthesia, or a state of insensibility to pain, when introduced into the circulation through the stomach. Now, while not admitting the accuracy of this statement, it is only necessary to compare the phenomena produced by chloroform upon the animal organism when administered in different ways, to be quite ready to admit that its general effects are very greatly modified by circumstances entirely dependent upon the mode in which it is used.

The influence of the mode of administration upon the character of the resulting phenomena may be illustrated in a slightly different way. Hydrate of chloral, as is well known, cannot exist in the presence of an alkali—the smallest trace is sufficient to decompose the chloral and set free chloroform. Liebreich, of Berlin, was recently led to suppose that this transformation would be effected should chloral be given to a living animal by the alkalis of the blood. Subsequent experiments have very conclusively demonstrated the justice of Liebreich's hypothesis.

But the physiological effects of hydrate of chloral are not precisely identical with those occasioned by chloroform, even when equivalent quantities of the two substances are administered in the same way, by the stomach or by injection into the circulation. Chloral, in moderate doses, seems to be a more feeble stimulant and a less certain anæsthetic than chloroform; but, on the other hand, it is a more powerful hypnotic, and would appear to induce a more complete state of muscular re-

laxation. It also maintains its impression on the organism a much longer time than chloroform. These comparative results are readily explained—(1) by difference in the rapidity with which the two substances enter into the blood; (2) by the fact that chloral, before it can act as chloroform, must undergo a chemical transformation, the completeness of which will vary with the amount of alkali present in the blood at any given time. Thus there is an apparent difference in the manner in which these two agents reach the nervous centres, and there is a corresponding apparent difference in the intermediate phenomena, although the specific effects of each upon the nervous elements must be indicated.

But if the same substance—ether or chloroform—produces effects which, within certain limits, vary according to the way in which the substance is introduced into the circulation, *a fortiori*, unlike substances, though possessed of certain common physiological properties, will vary more or less widely the manifestations of such properties according to the manner in which the agents are made to act upon the organism.

M. Claude Bernard discovered one day that ether in the stomach of a dog, even to narcotism, increased the pancreatic secretion, and apparently facilitated digestion, while alcohol, similarly employed, checked this secretion and arrested digestion But he fortunately adds, that he had used in this comparative experiment *concentrated* alcohol, as also, that he had found, on diluting the alcohol with water (*que les mêmes effets ne se rencontrent plus*), that the same effects were no longer met with—that instead of being an arrester of the secretions it become an exciter of them.* In a word, the effects of alcohol upon the intestinal secretions were similar to those produced by ether, when once the two substances could find access to the circulation and there enter into solution upon the same terms.

The toxic powers of the substances employed, their volatility and solubility, are also important circumstances which control the phenomena produced by the administration of anæsthetics. Amylene is a powerful agent—a few drops circulating in the blood are sufficient to produce anæsthesia and death. Although sparingly soluble, it is exceedingly volatile, and is consequently rapidly introduced into the circulation, as it is also rapidly eliminated from it. The "stages" which mark its progressive action are short and ill defined. Ether is a much less powerful substance. The blood must hold in solution several drachms before narcosis is produced; and although very soluble, it is so volatile as to escape from the circulation almost as rapidly as it can be intro-

---

* Leçons sur les Effets des Substances Toxiques, vingt-neuvième leçon, pp. 426–34. Paris, 1857.

duced. Hence the "stages" which mark its progressive action are long and well defined. If recovery from the anæsthetic state is not almost immediate on suspending the inhalation of ether, it is because the large quantity of ether actually in solution in the blood at the moment of the development of that state can only be eliminated after a considerable period of time, notwithstanding the rapidity with which that elimination is effected.

Alcohol is even a still less active poison. The blood will absorb large quantities of it before narcosis is produced It is also much less volatile than either amylene, ether, or chloroform, and is consequently eliminated from the system more slowly. Hence the various stages of stimulation, intoxication, and narcosis succeed each other slowly, and are well marked, by the condition of the brain, and the greater or less activity of most of the organic functions. Nitrous oxide, on the other hand, is one of the most powerful of known stimulant narcotics. It is exceedingly soluble in the blood, and, existing in a gaseous form, is possessed of active diffusible properties. It produces its physiological effects upon the nervous centres, whether slightly or profoundly, with singular rapidity, and the shortness of the time necessary to a recovery from the same is equally remarkable.

A proper appreciation of the physical properties of substances, and of the modifications in effect which may be obtained by introducing the substance into the blood through some new channel, or by causing it to act upon the nervous centres in some new way, will, I think, lead most persons to the conclusion, that however irrefutable may be the evidence that anæsthetics properly so called—nitrous oxide, alcohol, ether, chloroform, etc.—act directly and specifically upon the nervous elements, there is no reason for attributing the differences which may be observed in their effects, whether primary or secondary, to radical or specific differences in their mode of acting upon the nervous elements. They all act in substantially the same way upon these elements, and give rise to phenomena which only vary within the limits of a *single specificity*, which is represented by their common action upon the nervous centres as stimulants and narcotics.

If, then, our conclusion is correct, we may affirm that there is no more reason for calling nitrous oxide *laughing* gas than there is for calling it *dancing* gas, and that with equal exactness, or rather inexactness, these adjectives may be fastened upon the words ether and alcohol; as also, we may affirm, that anæsthesia, whenever present, shows a like inactivity or paralysis of nervous force, which must be occasioned by a similar and identical *final* action, whatever may have been the special anæsthetic employed. Indeed, I know of no essential psychological difference between "*le gai délire*" produced by nitrous oxide and that occasioned by ether or alcohol, as I know of no specific differences between the narcosis of nitrous oxide and the narcosis of amylene and chloroform.

The more slowly the successive stages of excitement, intoxication, and narcotism are induced, the more various will be the evidences of nervous disturbance; but the greater or less permanence of an impression is a circumstance entirely independent of its essential character as well as of its specific cause.

(To be continued.)

FORMATION OF THE DENTINE.

BY DR. FRANZ BOLL, BERLIN, PRUSSIA.

(TRANSLATED BY HENRIETTA HIRSCHFELD, D.D.S.)

(Continued from page 117.)

I SHOULD not have thought to enlarge the very extensive literature at present existing in regard to the development of the teeth, had it not been that on account of my investigations of the terminations of the nerve fibres I was obliged to give special consideration to the development of dentine. Shortly after Prof. Waldeyer had published his excellent treatise, "Investigations on the Development of the Teeth," which seemed to have brought this complicated matter to a definite conclusion, there appeared in Virchow's Archives another article on this subject by Prof. H. Hertz, in which the author expresses quite contrary views. While Waldeyer regards the formation of the dentine to consist of a transformation of *one* part of the protoplasm in the dentinal cells into a gelatinous substance, and finally calcification, leaving the balance of the protoplasm in the shape of soft fibres unchanged in the hardened surrounding, it is regarded by Hertz as the chemically changed and calcified intercellular substance of the pulp cells which form the fundamental substance of the dentine. In my investigations, I was obliged to take into consideration the generally accepted views of Waldeyer, as well as those directly opposite, promulgated by Hertz, in order to explain the contradictions of the two investigators and to form my own independent opinion.

I give the results of a series of careful and conscientious investigations made on calf embryos by the following method: the embryonal jaws, more or less ossified, were placed in vinegar made from wood (holzessig) and in weak solutions of chromic acid. I obtained very good results with nitric acid, solutions of five to ten per cent. In the five per cent. solution especially, the most delicate histological features in the decalcification may be brought out.

The most superficial cell layers of the embryonal pulp already present peculiar characteristics before any trace of dentine exists. The gelatinous intercellular substance, existing at this time in abundance in the pulp, disappears more and more toward the periphery, while the cells aggregate more and more, thus forming a simple layer of longitudinal cells, before the appearance of the first dentine, while other more rounded and irregularly-arranged cells form the connection with the interior of

the pulp. To this cell layer the name "membrana eboris" is given by Kölliker. All investigators have noticed the similarity of this layer with a cylinder epithelium, which is indeed striking. These longitudinal cells are in close connection, without being separated in the least by any trace of intercellular substance, and in the specimens prepared in wood-vinegar, are distinctly marked off from the pulp tissue beneath.

After the discovery of this superficial cell layer by Schwann, Lent pointed out its great importance in the formation of dentine; *and there is no doubt but that this layer is really the matrix for the formation of the dentine.* I have adopted the name "odontoblasts," given to these cells by Waldeyer.

The odontoblasts present a great variety in their shape. The only general distinction is, that the longitudinal diameter is much greater than the transverse, at times double the length. The odontoblasts are mostly irregularly prismatic in shape; but spindle, egg, and pear shapes, with every other possible variety of these forms, are by no means rare. (Fig. 1.) Toward the end near the pulp there is also always seen the one oval, dark nucleolus with its one or two nucleoli visible after the application of nitric acid.

Fig. 1.

The statements of Waldeyer and Hertz, in regard to the membrane of the odontoblasts, are entirely contradictory. While Waldeyer states that no membrane exists, Hertz insists upon its being present. I am decidedly on Waldeyer's side of the question. The absence of a membrane is to my mind chiefly manifested by the distinct peculiarity of the processes projecting from the body of the cell; and further, in the examination of fresh cells there is never a marked outer layer on the protoplasm to be distinguished. In regard to the processes, Waldeyer and Hertz equally disagree. The first investigator describes very short lateral processes on the odontoblast, connecting the cells to each other. According to Hertz, these lateral processes are very rare; and I must confess that their existence seemed to me rather doubtful at the commencement of my investigations. In sections of specimens prepared by wood-vinegar, the cells appear with distinct contours, and so close together that it seems impossible to find room for lateral projections. In a five per cent. solution of nitric acid they are, however, easily demonstrated; and I do not hesitate to affirm their constant presence, as I have drawn them in Fig. 1. They appear as very delicate protoplasmic fissures, often one to three between two cells, while otherwise the cells are distinctly marked off from each other. No one who has once seen these protoplasmic processes will attribute a membrane to them, and this proves the absence of a membrane for the cells, from which substance they project.

The two investigators differ likewise in regard to the processes toward the pulp. Waldeyer declares the pulp process as being con-

stant. Hertz says the majority of the cells are rounded toward the pulp. It is true, the connections with the pulp are of so delicate a nature that they are generally torn in the preparations. By previous hardening, however, in a two per cent. solution of bichromate of potassa, there may readily be discerned one, and sometimes two, central processes present, whose direct communication with the deeper cells I was several times able to demonstrate. These central processes are only distinguished from the lateral ones by their larger size. Besides these processes already mentioned, there are others, in various numbers, projecting from the odontoblasts into the tubes of the dentine. While some cells have only one, I have counted on others three and four, and at times even five and six dentinal projections, which gave them the appearance of ciliated cells. They are distinguished from the two other kinds of processes by the less granulated protoplasm, and brighter lustre. They branch off and frequently anastomose with each other. The whole complicated tubular system, throughout the dentine, is filled up by these projections. These dentinal tubes were formerly considered to be filled with a fluid, but it was discovered by Tomes that they contained "soft fibre." It was proven by Beale that these "tooth fibres" were the projections of the odontoblasts. According to Hertz, these tooth fibres are only found in that part of the dentine nearest to the pulp cavity, but *not* toward the termination of the tubes, near the enamel or cement. Hertz differs in this statement not only with Waldeyer, but also with Tomes and Neumann. I was able to prove, at least in the incisors of young rodents, the existence of the soft fibrils in the peripheral part of the tubular system. Great variations may be observed, according to the individual peculiarities of the specimens examined. It is therefore one of Neumann's observations, that the tooth fibrils become atrophied at the periphery of the teeth of adults.

Fig. 2.

In the perfectly developed tooth, the odontoblasts exist as well as their peripheral projections. I have drawn one (Fig. 2), from the developed incisor of a rabbit. The difference between these and the embryonal form is very obvious, the longitudinal diameter exceeding many times that of the transverse. While the pulp process is generally always present, and the dentinal processes may be extracted with ease, at times of great length, from the dentinal tubes, I have never been able to detect any lateral protoplasmic anastomoses in this state of development.

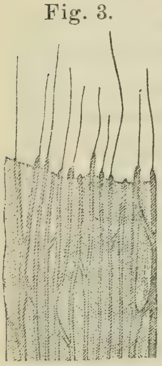
I shall now consider one peculiarity in the already perfectly developed dentine. I mean the formations called "tooth sheaths," by Neumann. After it had been a long time a matter of dispute whether the dentinal tubes were simple spaces without walls in the main substance, or whether they had previously formed walls and surroundings of their own, Neumann has finally settled the question in favor of the latter

opinion. He always succeeded by different methods in perfectly isolating distinct tubular walls around the dentinal canals. Inside of these tubes are the soft tooth fibrils proper, the processes of the odontoblasts. Waldeyer confirms these statements of Neumann. Hertz was, however, not able to satisfy himself in regard to the tubular nature of these formations. He thinks they are independent and very resistant fibres, having nothing in common with the intertubular substance. He is not able to demonstrate any difference between the sheath and the soft fibres lodged in them. He judges the latter to be only the soft and less resistant centres of the first, both projecting directly from the dentinal cells, their membrane forming the peripheral firmer part of the fibres, while the protoplasm of the cells furnishes the softer central part.

I cannot agree with this opinion of Hertz. On the contrary, everything, to my mind, proves the correctness of the results obtained by Waldeyer and Neumann.

If a fresh tooth be placed in a very diluted solution of chromic acid, concentrating this, day after day, until it becomes a two per cent. solution, and finally adding a few drops of muriatic acid, the intertubular substance will be softened to a pulpy mass. Separating this, specimens like Fig. 3 may readily be obtained, exhibiting the tubes projecting beyond the margin of the specimen, and out of their interior, the more delicate fibre is distinctly marked off. A gradual diminution in size could never be proven at the points where the latter shoot out from the former. It seems, moreover, that Hertz's opinion is contradicted by the fact that even in completely developed teeth the fibres of the odontoblast may be extracted from the tubes in considerable length. After having treated fresh teeth for several days with one to two per cent. solutions of bichromate of potassa, I sometimes obtained odontoblasts with processes, whose longitudinal diameter exceeded the longitudinal diameter of the cells, six and even eight times. This diameter, and the very delicate nature of these fibrils extracted in this way with the odontoblasts, answered exactly the descriptions of the dentinal fibrils given by Waldeyer and Neumann, but by no means those of the much coarser dentinal tubes of Neumann.

Fig. 3.



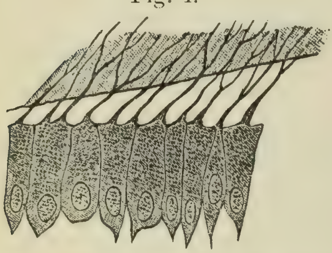
In the pathological condition of the tooth tissue in caries I perceive the main confirmation of Waldeyer's and Neumann's opinion. Scraping with a delicate knife the decayed surface of a human tooth, and placing the substance thus obtained under the microscope, stiff, straight, hollow tubes will be seen, which are the isolated sheaths of Neumann. The intertubular substance is dissolved, the delicate fibrils have disappeared, the sheath only remaining, but in such a perfect form that there can be no doubt in regard to their tubular character. On the specimens pre-

pared dry, there is not a trace to be seen of those walls, proper to the dentinal canals. In my opinion there is no other explanation than the one given by Neumann, viz., that those parts of the intertubular substance *nearest* to the lighter borders (lumen) of the dentinal canals, are furnished with a very peculiar power of resistance against external influences. We are able to isolate the boundaries of the canals by destroying the other parts of the dentinal substance by mineral acids, and precisely in the same manner do caries in the living tooth. There is not much difference whether we consider these dentinal sheaths, with Waldeyer, as "elastic boundary layers of the intertubular substance for the fibrils," or whether we, with Neumann, think them to be "concentrated parts of calcified basal substance of the dentine." At all events, the organic connection of those sheaths with the basal substance, and the simultaneous development of both, is the fixed opinion of both investigators; I am inclined to adopt Neumann's opinion. The peculiar, hard, stiff nature of the tubes, isolated by decay, seem to justify the conclusion that those boundaries are impregnated with lime salts.

We shall now consider the process of development. According to Hertz, the main substance (grundsubstanz), or basal substance, is the chemically changed and calcified intercellular substance of the pulp. This bears a close relation to his opinion in regard to the nature of the dentinal tubes, which we, however, do not accept. According to his description, there appears a slightly striped, intercellular substance between the cells of the superficial layer, increasing at their expense, and making them, in their peculiar form, pointed towards the dentine. This intercellular substance calcifies, forming the basal substance of the dentine. The odontoblasts are not themselves active in the formation of the dentine. Their membrane forms the very resistant, external part (dentinal sheath of Neumann); their protoplasm, the central, softer parts (Neumann's dentinal fibrils) of the solid dentinal fibre, under which name Hertz comprises both formations as one. But, as I *never* saw even a trace of intercellular substance at the boundary towards the dentine, I cannot agree with Hertz's explanation of the genesis of the dentine. The single cells are close, and, at the first glance, have also distinct contours placed together. The protoplasmic fissures are only brought in view by the previous mentioned method. I was very seldom able to see the gradual pointing of the odontoblasts, and their transition into the dentinal fibrils. Generally the latter are not gradually, but are sharply, marked off from the former. Another circumstance not explained by Hertz, is that most of the odontoblasts do not send off *one*, but many processes into the dentine. With Waldeyer's theory it is entirely different. At the commencement of my investigations, I was frequently inclined to regard Hertz's objections to Waldeyer's observations correct. The longer, however, I continued my investigations, and the more I perfected my methods, the more I became

convinced of the extraordinary care and correctness of Waldeyer's observations into all the minutiæ. According to these, the course of the dentinal process runs thus: the membrana eboris is formed in advance, by the odontoblasts, and constitutes a distinctly marked, continuous covering of the pulp. The odontoblasts, with nearly their whole mass, are now transformed into hard tooth substance, except some delicate strings in the longitudinal axis of these, that do not become calcified, but remain as soft dentinal fibrils in the main substance (grundsubstanz). The substantia eburnia or dentine is only constituted out of the chemically and previously changed odontoblasts. I can do nothing but indorse this opinion of Waldeyer. In Fig. 4 I have drawn two sections through the dentinal boundary. Both present very distinctly the boundary between the dentine and the membrana eboris. There is not a trace to be seen of the intercellular substance, according to Hertz; there is also no visible, gradual diminution of the odontoblasts. The last specimen is peculiarly instructive. In the preparation of this, the young dentine has become separated from the odontoblasts, and pushed a little to one side; but the fibrils projecting from the odontoblasts have, nevertheless, remained *in situ*.

Fig. 4.



DEATH FROM CHLOROFORM.

BY W. W. RICE, GREAT BARRINGTON, MASS.

On Saturday, the 12th of February, 1870, Mrs. Bradford C. Foote, of Sheffield, Mass., aged 36 years, called at my office to have twelve teeth extracted, and wished to take chloroform for that purpose. I tried to dissuade her, as also did her husband, from taking it, as she was only suffering from the right inferior second bicuspid, which was ulcerated, with swelling upon the gum, and advised her to submit to the extraction of this tooth without chloroform; but her reply was, that I had given it to her two years before without injury, and that she could not submit to the operation without it. Dr. Wm. H. Parks was accordingly sent for, and chloroform was administered. It was given in the usual way—by pouring a small quantity upon a napkin, and held a little distance from the face, so as not to interrupt a sufficient supply of atmospheric air. She passed under its influence quite easily, and did not take as much chloroform to produce insensibility as in many cases. She was made partially sensible by the extraction of the first four teeth; a little more chloroform was given, and so on, until all were extracted. Nothing unusual occurred until after the operation. While in the act

of retching or vomiting, she seemed to strangle, and suddenly expired. Dr. Parks was supporting her head at the time, with his finger pressing upon the temporal artery, and the first intimation of danger was the sudden cessation of pulsation, and in a moment she ceased to breathe. She was immediately placed in a horizontal position, and artificial respiration kept up for three-quarters of an hour, after which time, seeing the hopelessness of the case, further efforts at resuscitation were abandoned.

We were of course *extremely anxious* to have a *post-mortem* examination, to ascertain, if possible, the cause of death; and it is very much to be regretted that the friends would not submit to it; but we have since learned of a clandestine post mortem examination by other parties, who failed to find any organic disease to cause death. Be this as it may, Dr. Parks, in his report of the case, says there is not a doubt that death resulted from asthenia of the heart, induced by the inhalation of chloroform; and the existence of an organic disease of this organ would only have contributed to the danger of such a result. Since this sad occurrence I have had many questions asked me by members of the dental profession (by letter), and in reply will say that I have used chloroform in my practice for about eighteen years. I often have given it myself for short operations; but when I have many teeth to extract, I call Dr. Parks to my assistance, who administers the chloroform and watches its effect upon the patient. I have always thought it too much for any one person to administer chloroform, watch its effect, and extract the teeth, particularly where the case is protracted. It is a greater responsibility than any one person ought to assume.

Dr. Parks has administered chloroform in over two thousand cases. I also have given it at least half as many times, and this is the first case that has ever presented any alarming symptoms.

HEREDITARY TRANSMISSION OF DENTAL IRREGULARITIES.

BY J. H. M'QUILLEN, M.D., D.D.S.,
PROFESSOR OF PHYSIOLOGY IN PHILADELPHIA DENTAL COLLEGE.

(Concluded from page 75.)

In the preceding portion of this communication evidence has been presented of the most conclusive character of the transmission of hereditary peculiarities in the dental organs, not only from parent to children, but in addition from grandparent to grandchild, reproducing in the third generation that which was, to a certain extent, modified if not passed over in the intermediate one. These cases are in accordance with what has been long recognized by physiolgists and pathologists in the transmission of normal and abnormal peculiarities in other portions of the human organism. This law of hereditary transmission, or what Mr. Darwin denominates atavism, prevails throughout the entire organic world,

vegetal and animal, and it is through its operation that each species produces beings similar to itself.

At this time, when the origin of species is an all-absorbing subject of consideration on the part of many, and of investigation with a few, it is possible that the dental organs may perform a not insignificant part in the solution of this important question. When is remembered the prominent part that the teeth have occupied from the time of Cuvier to the present, in the paleontological researches of Owen, Leidy, and others, determining with unquestionable accuracy the character, habits, and peculiarities of extinct animals, in some instances building an entire being accurately conceived from a single tooth, the possibility of what has been suggested above assumes additional plausibility.

On this point, however, the writer does not anticipate being able to do more than merely direct attention to a few additional facts in connection with dental irregularities, leaving it with others to determine whether the teeth may aid in the solution of the origin of the species, and hoping that the suggestion may stimulate some minds to investigate in this direction.

As Sir Charles Lyell has very justly remarked in the "Antiquity of Man:" "In the very outset of the inquiry we are met with the difficulty of defining what we mean by the terms 'species' and 'race;' and the surprise of the unlearned is usually great when they discover how wide is the difference of opinion now prevailing as to the significance of words in such familiar use. But in truth we can come to no agreement as to such definitions unless we have previously made up our minds on some of the most momentous of all the enigmas with which the human intellect ever attempted to grapple." Again: "From the time of Linnæus to the commencement of the present century, it seemed a sufficient definition of the term species, to say that a species consisted of individuals all resembling each other, and reproducing their like by generation.

"Lamarck proposed that the element of time should enter into the definition of a species, and it should run thus: A species consists of individuals all resembling each other and reproducing their like by generation, *so long as the surrounding conditions do not undergo changes sufficient to cause their habits, characters, and forms to vary.*"

Without pretending to decide such questions as these, but simply confining ourselves to facts as presented to the actual observations of daily experience, in connection with dental irregularities, not only is the law of hereditary transmission observable, but quite as frequently a tendency to *variation* is offered. Thus, it is not unusual to find irregularity manifested in children whose parents are remarkable for the symmetry and regularity of their teeth.

Again, irregularities of the teeth among aboriginal men have been observed as rare by those who have made the subject one of extended and careful observation. The opportunities, in the Academy of Natural Sci-

ence of Philadelphia, afforded me of examining Morton's collection of skulls—many of savage nations—are in confirmation of this. The large development of the maxillæ and facial bones generally, which give a pre-preponderance of the animal over the moral and mental, in the face of a barbarian, has very properly been attributed to the tough character of his food, the imperfect manner of its preparation, and the general habits of savage life. The large size of the maxillæ affording ample room for the dental organs, the latter could not be other than symmetrical in their arrangement. The influence of soil, food, and climate in modifying the physical, moral, and mental energies of man, is a truth very generally recognized at the present day; and the influence of food, in modifying the physical structure, is made markedly manifest in the changed condition of the maxillæ, in the diminution in size, attendant upon the employment of the softened food of civilized life, requiring little effort in mastication, in contradistinction to the coarse diet of the savage. In childhood, when the bones are in a plastic condition, the influence of diet, of a soft or hard nature, of course exerts a marked influence upon the form and size of the maxillæ; and it is a matter of considerable moment, that children should be supplied with food requiring some effort in mastication. The contrast presented in the broad jaws of the English and German is markedly in contrast with the contracted jaws of the American; that the difference in character of food, and the difference in time devoted to its mastication, has much, if not all, to do with this, will be generally admitted When a diminution in the size, or a change in the form of the maxillæ ensues, from whatever cause, unattended by a decrease in the size of the teeth, irregularity necessarily follows. A prolific cause of this is also found in the interblending of families, or rather of nationalities, particularly in our own country, where the descendants of the English, the Irish, the German, the French, Spanish, etc. are constantly intermarrying; the difference in the size and form of the maxillæ and teeth in these nationalities produce in their offspring irregularities of the most marked character.

When examining a series of jaws of different ages, arranged so as to show deciduous and permanent teeth, it is not a matter of surprise that there should be irregularity in the permanent set; but, when observing their crowded and irregular arrangement in the jaw, prior to eruption, it is rather a matter of astonishment that they should ever assume a regular and symmetrical appearance.

Having noticed the hereditary transmission, and the tendency to variation, on the part of the teeth, it is not an uninteresting question to ascertain what will be the result in those cases of irregularity, transmitted from parent to child, that have been corrected by the efforts of the dental practitioner. Will the irregularity be reproduced in the next generation, or not? This is a matter for future observation, and will demand years for its solution.

MISCELLANY.

ABSTRACTS AND SELECTIONS.

BY J. W. WHITE.

Medical Times and Gazette.

From a lengthy article on "Artificial Respiration," by Dr. B. W. Richardson, we extract the following:

"The value of artificial respiration has been very differently, and I think very imperfectly, estimated. Some have considered it nearly useless, unless it has been applied immediately after the cessation of respiration. Others have assumed that it may be successfully employed several minutes after respiration has entirely ceased; the actual truth lies nearer to the first proposition; but even that, I find from experiment, may be exaggerated. Success or failure of success depends, in fact, on several circumstances, which require to be enumerated in detail, and which are best considered by naming the causes which lead to failure. Firstly, then, if from the mode of death, the heart has failed simultaneously with the respiration, a lapse of a very few moments suffices to render the process useless. I have, like Hook, seen the motion of the heart restored by inflation of the lungs, but never after a full interval of thirty seconds of cessation on the right side. Secondly, even where the action of the heart may be continued, if, from the cause of death, the vessels of the pulmonary tract have undergone contraction, the process is of little avail. Now, in death from some common agents this contraction occurs; in death from chloroform, for example, we have constant evidence of the phenomenon, the lungs being left white and practically bloodless. Thirdly, before the action of the heart has positively ceased, the blood on the right side may have undergone coagulation, upon which the propelling power of the heart is exerted upon a mechanical obstacle, and by necessity artificial respiration utterly fails. Fourthly, the blood, though it may circulate, may be in a condition unfavorable to oxidation, even in presence of air, and again artificial respiration may be useless, however promptly applied. Lastly, in some forms of death there seems to occur a sudden and fatal change in the nervous centres, with the intimate nature of which we are as yet altogether unacquainted, but which determines as faithfully as when the medulla oblongata is mechanically injured. Thus, *in limine*, the value of artificial respiration is considerably limited. To insure its success, there must be motion of the heart, open pulmonary vessels, fluid blood, and natural condition of nervous centre."

Canada Journal of Dental Science.

In an editorial upon "Dental Fees in Canada," Dr. Beers says:

"To sum up, dentistry in Canada is very inadequately remunerated; that is, where one endeavors to use for his patients the very best talents and skill he possesses, which has been cultivated and trained by years of steady studentship and faithful practice. If the Canadian public desire a responsible, educated and properly qualified class of men to take charge of their teeth, it must appreciate skillful work, and pay remunerative prices. If, on the other hand, it desires the dental profession to be principally composed of quacks, and their services to be incompetently rendered, they have only to continue patronizing the

'cheap dentists.' Cheap dentistry is a poor speculation, because no dentist worthy the name can afford to work for either love or fame alone. Not to mince the matter, he must have fair prices for honest work."

American Journal of Dental Science.

From an abstract of a lecture by Prof. Noel, of the Baltimore College of Dental Surgery, on "Enamel and Dentine," we quote his "conclusions:"

"I.—That the dentinal organ is composed of fibrillæ, more or less arborescent or branching.

"II.—The organ extends to the pulp, and surrounds and closely invests the pulp.

"III.—The calcification of a portion of the fibrillæ gives us hard dentine.

"IV.—The portion remaining uncalcified, we call dentinal fibrillæ.

"V.—That the dentinal fibrillæ are liable at any time to become more or less calcified and form dentine.

"VI.—That there is no difference between the calcified and the uncalcified fibrillæ, unless we except the central axis of nuclear matter as distinctive.

"VII.—That this central axis is liable at any time to change into fibril, and, as fibril, liable to be calcified, and form dentine.

"VIII.—There is no interfibrillar substance whatever.

"IX.—Fresh dentine, therefore, has no tubuli but has uncalcified fibrillæ, solid or nearly solid.

"X.—That the tubuli found in the dry tooth, or dead and dry tooth, and formed by the desiccation are evaporation of these dentinal fibrillæ, and have no existence in the living tooth.

"XI.—That the difference between dentine and the fibrillæ is simply one of mineral element, and the fibrillæ may at any time take up this mineral element and become true dentine, i.e. *calcify*.

"XII.—Enamel and dentine are not vitalized tissues, as far as the calcified portions are concerned; enamel is dead—perfectly dead—and dentine would be equally as much so, were it not for the fibrillæ uncalcified; enamel proper and dentine proper are amenable to physical and chemical laws only, and therefore any sensitiveness in dentine is in virtue of its fibrillæ, and of their organic continuity with the terminal nerve fibres in the pulp."

Dental Register.

In the report of the proceedings of the Ohio State Dental Society, Dr. Corydon Palmer, referring to the paper read by Dr. Watt, which was copied into this department last month, said:

"If it was not for the great respect he had for Dr. Watt, he would like to make some remarks on this point. This thing of filling teeth with the mallet is very peculiar. He had been experimenting in that way since the idea was first advanced, or nearly so. He had used three or four in succession, one after the other. First, a light one, with a tolerably long handle. He had used it for some time, and supposed it was about the right thing. Dr. Atkinson, on seeing it, told him he was fooling away his time in using it. He then got one some heavier, and found, after a careful trial, that the increased weight was an advan-

tage. He had finally got to using the lead mallet, and believed it still better than anything he had used, and thought better results could be obtained with it. He would not undertake to go into the principles of philosophy involved in it, but he was convinced of its excellence from his experience in its use, and the comfortable sensation experienced by patients compared with the use of the lighter mallet. The gold is as much more perfectly packed by the lead mallet than by the ordinary mallet, as that packed by the ordinary mallet exceeds that done by hand pressure."

Missouri Dental Journal.

Dr. Eames writes on "Heavy Foil:"

"The latest novelty in dental science, attracting much notice, is the use of heavy foil—foils ranging from 20 to 120 grains to the sheet. The credit of introducing this new sensation is due, so far as we have been able to learn, to Dr. W. H. Atkinson, of New York. It was brought to our notice by Dr. H. J. McKellops, of this city. Dr. McK., while on a visit to New York the past summer, called upon Dr. A., who, with his usual urbanity and politeness, invited his friend to witness the operation of filling teeth with the heavy foils, Nos. 15, 20, 30. Dr. McK. reports himself as very much surprised at the apparent ease with which Dr. A. manipulated them in all classes of cavities, and at the fine results produced. So well pleased was he with what he saw, that, immediately on his return home, he commenced the use of heavy foil in his own practice. The attention of ourself, and other members of the profession in the city, was called to it by Dr. McK., who invited us to witness the operation of filling with the heavy Nos. 20, 30, 60. The result has been the general—I might say the exclusive—adoption of them by all who have given them a fair trial. Prof. Judd is using No. 120 in some special cases, and speaks of it in the highest terms, but thinks Nos. 20 and 30 will be most generally used; uses 120 on large flat surfaces.

"Having adopted the use of them ourself, to the exclusion of all the lower numbers, and being daily better pleased with the results, and most fully satisfied that it is the best form of gold for filling extant, we ask the attention of our readers to a few facts respecting heavy foils:

* * * * * * *

"Adhesive foil Nos. 20 to 60 and upward approaches more nearly the sponge or crystal form in softness, because in the process of annealing it is brought back to nearly the same molecular condition. It also regains the property of adhesiveness to a much greater degree than the low numbers. Having been rendered fibrous by lamination, it excels the sponge or crystal in tenacity, and is therefore superior to these forms in that respect. It does not break up or crumble under the instrument, as these forms are apt to do. If properly manipulated, it is readily adapted to the walls of the cavity, and with the same expenditure of time and care, it may be more thoroughly condensed, and better margins can be secured than with any other form; being soft, non-elastic, tenacious, and adhesive, it may be carried over the edge of a frail wall without crumbling the wall in the least, its thickness preventing injury to the border or wall of the cavity by the sharp points of the plugger being driven through it, a difficulty attending the use of crystal gold, and the extreme low numbers of foil. Its extreme adhesiveness admits of the use of very fine serrations on the point of the plugger; hence

the surface of the plug presents a more solid and uniform appearance; being very tenacious, it makes a more lasting surface, because the foil is not broken or torn by the instrument in condensing, as has been observed in the case with the low numbers and with crystal and sponge gold."

Dr. Chase says:

"By the way, there is great *fascination* in the use of the heavy foils. I find myself disinclined to take up anything less than No. 20 now, even for *frail* cavities. By using it in strips one-eighth, or one-sixteenth of an inch wide, it can be *carried* and consolidated whenever the thinner leaves of gold can be. Furthermore, there is no comparison between them for adhesiveness; No. 20 being very far in advance of No. 2 in this respect. I find that I can *finish* a plug in half the time the surface of which is formed of No. 60 foil; it dresses down like solid coin."

PROCEEDINGS OF DENTAL SOCIETIES.

MICHIGAN DENTAL ASSOCIATION.

The fifteenth annual meeting of the Michigan Dental Association convened pursuant to adjournment, Tuesday Oct. 12, 1869, at Detroit, Mich.

The President being absent, Dr. Holmes, of Grand Rapids, was called to the chair.

G. E. Corbin, of St. John's; George P. Holmes, of Battle Creek; J. W. Storms, of Jonesville; W. R. Cutter, of Ionia; and Dr. C. B. Porter, of Ann Arbor, were elected members.

Wednesday.

Dr. Watling, of Ypsilanti, in the chair.

The following gentlemen were elected officers for the ensuing year:

President.—E. S. Holmes, Grand Rapids.

Vice-President.—R. S. Bancroft, Romeo.

Secretary.—G. H. Mosher, Jackson.

Treasurer.—J. A. Watling, Ypsilanti.

Executive Committee.—G. W. Stone, Albion; J. A. Watling, Ypsilanti, and G. P. Holmes, Battle Creek.

The question of "Sensitive Dentine" was taken up for consideration.

Dr. Corbin said: If the cavities were numerous, and the patient sensitive, he generally found cotton saturated with creasote quite effective; if chloroform was used, a coating of gum mastic with cotton would protect the dentine from the action of the saliva, as well as prevent evaporation, for weeks. Chloride of zinc was more prompt, but painful.

Dr. Douglass said that he had been accustomed recently to diet his patients who were subject to sensitive dentine, and found the results very satisfactory; in connection with this treatment he uses carbonate of lime. In dieting he uses Graham bread, taking little or no drink at meals, tea without milk or sugar, and no sugar except in food; to drink

nothing until meals have digested, and then to drink three or four times of water before the next meal.

Dr. Thomas preferred chloride of zinc, though the latter must be used with care ; arsenic with creasote is sometimes used, but it destroys the pulp, and should therefore be abandoned. He thought also that a sharp excavator was the best instrument for dealing with the dentine, though remedies for deadening the pain may be employed with advantage. Chromic acid is frequently employed, but is somewhat dangerous unless the greatest care is used.

Dr. Field has used the various remedies except arsenic. He greatly favored the free use of the excavator, and is strongly favorable to the use of creasote.

Dr. J. H. Warner said there was nothing like sharp instruments ; he iked carbolic acid, for, if the cavity could be reached, he believed there was something in it that operated well. Arsenious paste, chloride of zinc, etc., were all right if removed at exactly the right time. A bold hand was needed to do the cutting, yet, without constitutional treatment, all remedies might be unsuccessful.

Dr. Corbin regarded sharp instruments as a foregone conclusion. He believed the fibrilla in the dentine analogous to nervous matter.

Afternoon Session.

Dr. Crooks deprecated the practice of using arsenious acid as most dangerous to the teeth ; the use of chloride of zinc he favors, and uses extensively in his practice, with favorable results.

The next subject was "Alveolar Abscess."

Dr. Thomas contended that after the abscess had once formed it was impossible to save the tooth. He held that abscess never occurred until the tooth was dead.

Dr. Crooks would cut through the alveolar process and remove the diseased portion of the alveolus or root of the tooth.

Dr. Douglass said that in cases where there was little or no pain, and no outward inflammation, his plan was to clean out the pulp canal, washing it with creasote, and then sponging creasote into the abscess till it emerged through the fistulous opening. He then proceeded, at the same sitting, to fill both root and crown with gold.

Dr. Holmes thought that a great number of cases that came under the notice of dentists could be cured, if carefully and assiduously treated. He greatly valued a natural tooth. He thought that when there was any hopes of saving the natural teeth, it was the duty of the dentist to do all he could to do so.

Dr. Bancroft suggested that in difficult cases a good deal might be gained by pursuing vigorous measures for a short time, and then suspending operations long enough to allow nature to act.

Dr. Douglass advocated the application of chloride of gold, provided great care was taken in its use.

Dr. Holmes thinks that to extract all teeth with abscess would not only be a serious injury, but a wrong done to patients. He treats through the pulp canal invariably, cleans the cavity well, and applies remedies to assist nature in effecting a cure, and has been markedly successful.

Dr. Warner always opens through the canal, breaking up the sac. If the case is obstinate, treats through the alveolus, and generally finds the case yields to such treatment.

Dr. Thomas presented the case of a little girl, twelve years of age, with necrosis of the jaw, from which he had taken two teeth and a piece of necrosed bone.

A motion was made to suspend the rules making it necessary for practitioners to go through a definite course of study and graduate before they could be admitted into the Association, which called forth the almost unanimous voice of the members of the Association against "letting down the bars" in *any case*, thus practically lowering the standard of qualification.

Evening Session.

The next subject for discussion, "Inflammation of the Dental Pulp and Dental Periosteum," was taken up.

Dr. Crooks said that by skillfully treating the dental pulp, alveolar abscess may be avoided. The inflammation ought to be stopped as soon as possible, and resolution induced by antiphlogistic treatment. Scarification of the gum and leeching may advantageously be employed.

Dr. Stone found blood-letting unsuited to the climate, and preferred depletion by calomel and other cathartics.

Dr. Bancroft advocated reducing inflammation of the periosteum by counter-irritation.

Dr. Holmes favored local applications—painting the gum with aconite, iodine and belladonna.

Dr. Field employed mercurius vivus. He had used it with great success in a large number of cases.

Dr. Stone uses cathartics, Dover's powders, and slight doses of calomel, inducing evacuation of the alimentary canal.

Dr. Corbin thought saline cathartics acted admirably, and with plethoric persons would, in addition, deplete locally by scarification of the gums.

Dr. Benedict thought creasote good for inflammation of the dental pulp.

Thursday.

Clinics being first in order, some time was spent in examining an instrument for plugging teeth, called "Hyde's Pneumatic Dental Plugger," exhibited by Dr. Jackson, of Ann Arbor. This machine, which weighs

only twelve pounds, is composed of a treadle base, flexible pipe, and plugger, or tool handle, weighing only two ounces; is capable of giving any number of blows, light or heavy, up to one thousand a minute; saves from one-fourth to one-half the ordinary time of filling; requires no assistant, and gives less discomfort than any other mode of filling.

Dr. Jackson performed an operation with this instrument upon Dr. Thomas, on a posterior cavity in the left superior first molar, filling it, much to the edification of the gentlemen present, who think very favorably of the instrument.

Dr. H. F. Lyster, by request, exhibited to the Association a cystic tumor, composed of a portion of the lower jaw which he successfully removed in April last, in the interior of the State, from a lady patient. The doctor stated that from the left canine to the third molar the jaw had been expanded on every side to the size and thickness of an egg-shell. This change had been going on for seven years, and was supposed to have originated in irritation from an uncut tooth; and the fluid of the tumor had been evacuated several times for the relief of pain. Upon opening the tumor after removal, a foreign body about the size of a molar tooth was discovered, which proved, upon examination, to be a salivary calculus. The operation for removal consisted in making an incision along the lower border of the tumor and dissecting off the soft parts with the periosteum, and using a metacarpal saw and bone forceps just anterior to the canine and posterior to the third molar. The opening into the cavity of the mouth was made as late as possible, to avoid hemorrhage into the pharynx. By keeping closely to the tumor, hemorrhage was avoided, and no vessel required ligature. The dental artery was plugged in its bony canal. The dental nerve was discovered stretched across the interior of the tumor in its normal position, but unsupported by any tissues. The tumor was filled with a fluid of the appearance of saliva. The position of the chin and contour of the face had been well preserved by moulding binder's board and by wiring the teeth on the sound side. A plate will be supplied with artificial teeth as soon as the parts have become strong and firm. The recovery of the patient was rapid and complete.

Dr. Bancroft read a paper on "Dental Caries and Prophylactic Measures for the same." He directed attention to the fact that in bolted flour a large proportion of the mineral substance is wasted, only $4\frac{1}{10}$ out of the 57 parts of bone-making properties being retained, the rest being an utter waste of substances which are essential to the formation of the bone. This he thought was especially the case where infants were deprived of the substances in forming the bone and teeth; if fine flour is used in such a period as food for the child, its injurious effects are soon apparent. He gave the proportion of mineral and vegetable matter contained in the teeth, and held that unbolted flour was the best producer of bone and cartilage.

Dr. Corbin said that the fact that the husk part or bran contained the large part of the phosphates or carbonates of lime, so much needed to properly form the osseous system, was a position generally admitted. One evil of too fine bolting was the fact that people often eat more fine wheat bread than the system demanded in order to supply nature with the requisite amount of mineral ingredients.

Dr. Crooks thought there was generally too much animal and too little earthy matter in the teeth; and in persons not beyond the meridian of life the deficiency might be remedied by a greater supply of the phosphates or carbonates of lime. He had seen the femur of children so soft from the deficiency of bone-making food that it could be bent almost at right angles. Dentists ought to be more or less acquainted with medicine to make their operations a perfect success.

The following gentlemen were elected delegates to the American Dental Association, which meets in August, 1870, at Nashville, Tenn.: Drs. G. P. Holmes, Mosher, Corbin, Bancroft, Smith, E. G. Douglass, Storms, T. A. White, and Finch.

The Committee on Clinics reported the following resolution:

Resolved, That we have examined with *special* satisfaction *Hyde's Pneumatic Dental Mallet*, and recognize in it an instrument meeting a want in dentistry hitherto unsupplied, and do cordially recommend it for its simplicity, facility, economy in time and labor, comfort both to the operator and to the patient, combined with the highest style of workmanship.

C. B. Porter,
H. Benedict,
J. Lathrop, } *Committee.*

The report of the Committee was accepted, and the resolution adopted.

Drs. Watling, Smith, and Bannister were appointed a committee to look into certain irregularities in dental practice throughout the State, more particularly unprofessional conduct on the part of members of the Association. The following resolution was adopted:

Resolved, That clinical exercises be hereafter excluded from the order of business of this Association.

Adjourned to meet on the second Tuesday of October, 1870, at Jackson.

Geo. H. Mosher,
Recording Secretary.

SOUTHERN DENTAL ASSOCIATION.

The Southern Dental Association meets in New Orleans, La., on the second Wednesday in April, 1870.

It is to be hoped all interested in dental education, and the mutual improvement of such as are engaged in the practice of dentistry, will be present, no matter from what State they come.

James S. Knapp.

New Orleans, March 15, 1870.

SAN FRANCISCO DENTAL ASSOCIATION.

Feeling that you will be gratified to know that the dentists of the Pacific slope are striving to move in the right direction, I take pleasure in stating that an organization was effected September 1st, 1869, called the "San Francisco Dental Association." The following-named persons were elected officers to serve for the ensuing year:

President, C. C. Knowles; *Vice-President*, H. E. Knox, D.D.S.; *Cor. Secretary*, W. J. Younger, M.D.; *Rec. Secretary*, J. Ball; *Treasurer*, F. A. Park.

Henry E. Knox, D.D.S.

BALTIMORE COLLEGE OF DENTAL SURGERY.

The thirtieth annual commencement of the Baltimore College of Dental Surgery was held on Wednesday evening, March 2d, 1870, at Concordia Opera House, Baltimore, at eight o'clock P.M.

The valedictory address was delivered by M. J. DeRosset, M.D., Professor of Chemistry, on behalf of the graduating class.

The degree of Doctor of Dental Surgery was conferred upon the following members of the graduating class by Professor F. J. S. Gorgas, Dean of the Faculty:

Louis Augspath	Russia.
W. R. Ballard, Jr., D.D.S.	England.
William Henry Bennett	Tennessee.
Clinton T. Brockett	Maryland.
Benjamin H. Catching	Mississippi.
Alexander D. Cobey	Maryland.
Abraham F. Cox	Virginia.
John Henry Coyle	Georgia.
Kurwin L. Eisenhart	Pennsylvania.
Edward S Fawcett	Virginia.
Hillary E. Hardey	Maryland.
Louis S. Ledbetter	Georgia.
James H. Ludwig, M D.	Maryland.
Jonathan Magruder	Maryland.
John W. Meng	Missouri.
Eber R. Perrow	Virginia.
Oscar E. M. Salomon	Germany.
Thomas J. Speck	Tennessee.
David F. Swengel	Pennsylvania.
Harry G. Ulrich	Pennsylvania.
Andrew P. White	Tennessee.
John T. Wilson	Virginia.
Thurston Wolfe	Virginia.
W. Tryon Yarbrough	Mississippi.

MISSOURI DENTAL COLLEGE.

The third annual commencement of the Missouri Dental College was held, in conjunction with the commencement of the St. Louis Medical College, on March 9th, 1870, at Temple Hall, corner of Fifth and Walnut Streets, St. Louis, Mo.

The address was delivered by Prof. E. F. Smith.

The number of matriculants for the session was sixteen.

The following are the names of the graduates: Roscoe C. Mowbray, Frederick Kempff, John Campbell, and Edward C. Chase.

PHILADELPHIA DENTAL COLLEGE.

THE seventh annual commencement of the Philadelphia Dental College was held at the Academy of Music, Thursday, February 24th, 1870, at 12 o'clock M.

The address to the graduates was by S. B Howell, M.D., Professor of Chemistry. Valedictory by Wm. H. Jackson, D.D.S., of Canada; closing address by Rev. J. L Withrow.

The number of matriculants for the session was seventy-four.

The degree of D.D.S. was conferred upon the following members of the graduating class by Ex-Governor James Pollock:

NAME.	RESIDENCE.	THESIS.
L. A. Barber	New York	Duty of the Dentist.
Sumner J. Barber	New York	Extracting Teeth.
Charles E. Bolles	Massachusetts	Filling Teeth.
Daniel W. Clancey	Ohio	Nitrous Oxide.
Edward R. Cogswell	Nova Scotia	Digestion and its Organs.
Lansing B. Cook	New York	Digestion.
William C. Dickson	Mississippi	Our Professional Duty.
William St. G. Elliott, M.D.	New Jersey	Mechanism of the Lower Jaw.
Henry J. Ewing	Michigan	Dental and Medical Professions.
John F. Grady	California	The Blood.
Frederick A. Graham	Ohio	Dental Hemorrhage.
E. R. Groth, M.D	Russia	Tonicity of Muscles.
Linneaus C. Hole	Ohio	Alveolar Abscess.
Lyle B. Holmes	New York	Microscopy of the Teeth.
William H. Jackson	Canada	Fifth Pair of Nerves.
Ferdinand Jarisch, M.D	Austria	Blood.
George W. Jenkins	Ohio	Diagnosis.
Samuel S. Johnson	West Virginia	Food.
J. Warner Knox	Pennsylvania	Vital Properties of the Blood.
George V. Krick	Pennsylvania	Mechanical Dentistry.
James Semmi Levy	Russia	Dentistry in Europe and America.
Albert von Lindenau	Germany	Pulp Diseases.
John W. Lyder	Ohio	Mechanical Dentistry.
J. Moller	Norway	Filling Teeth.
Lewis E. Myers	New York	Artificial Dentures.
Spencer M. Nash	New York	The Necessity for a New Work.
H. Mason Perkins	Massachusetts	Odontalgia.
John W. Pritchard	New York	The Election of Methods of Filling Teeth.
Daniel B. Ramsay	Pennsylvania	Alveolar Abscess.
Cassius M. Richmond	Ohio	Filling Teeth.
Robert A. Savage	Alabama	Filling Teeth.
James D. Schepnoes	Louisiana	Digestion.
William S. Shields	California	Treatment of Dental Caries.
François Silvestre	Switzerland	Importance of the Teeth.
Evan Snider	Indiana	Dentistry.
James Solliday	Ohio	Anæsthesia.
H. Charles Thimme	Prussia	Analysis Sanguinis.
George A. Upton	Maine	The Requirements of a Dentist.
Theop. A. Venner	Canada	Fifth Pair of Nerves.
Albert Warren	Massachusetts	Blood.
David A. Wormald	England	Mechanical Dentistry.

PENNSYLVANIA COLLEGE OF DENTAL SURGERY.

THE fourteenth annual commencement of the Pennsylvania College of Dental Surgery was held at the Musical Fund Hall, Philadelphia, on Saturday Evening, February 26th, 1870.

The valedictory address was delivered by James Truman, D.D.S., Professor of Dental Histology and Operative Dentistry.

The number of matriculants for the session was eighty-three.

The degree of D.D.S. was conferred on the following graduates by Henry C. Carey, Esq.

NAME.	RESIDENCE.	THESIS.
J. Fred. Babcock	Maine	Morbid Effects of First Dentition.
Charles H. Bagley	Pennsylvania	Amalgam.
Edward F. Barnes	Massachusetts	The Dental Pulp.
Henry E. Beach	Virginia	Inflammation.
Francisco E. Brunet	Cuba	Stomatitis.
George T. Carpenter	Illinois	Caries of the Human Teeth.
Charles P. Coffee	Ohio	Dental Caries and Treatment.
Frank L. De Gour	Pennsylvania	Science and Medical Culture.
E. Rubio y Diaz, M.D.	Cuba	Influence of Syphilis upon Diseases of the Mouth.
Charles E. Edwards	Pennsylvania	Caries.
Thomas H. Gilpin	Maryland	Development of the Teeth.
Augustus V. Hartlevan	Pennsylvania	Vulcanite Base.
Ferdinand Hasbrouck	Pennsylvania	Nitrous Oxide.
John Hellings	Pennsylvania	Cleft Palate.
W. H. I. Hilliard	New Jersey	Disease of Maxillary Sinus.
Louis G. Houard	Cuba	The Affections of Superior Maxillary Bone.
Samuel F. Howland	Massachusetts	Preservation of the Teeth.
Jay H. Johnston	Pennsylvania	Extraction of Human Teeth.
George W. Klump	Pennsylvania	Facial Neuralgia.
O. L. de Lalande, M.D.	France	Mercurial Stomatitis.
Jonathan T. Leet	Pennsylvania	Caries of Human Teeth.
William A. Marler	North Carolina	The Dental Profession.
J. Henry Mease	Pennsylvania	Fracture.
Charles W. Meloney	Delaware	Digestion.
Gustavus J. R. Miller	Pennsylvania	Operative Dentistry.
Jose M. Portuondo	Cuba	Affections of the Gums.
Alfred Reaud	France	Sketches on Dentistry.
Augustus J. Rederich	Iowa	Treatment and Filling over Exposed Pulps.
Granville L. Robb	Pennsylvania	Antrum of Highmore and its Diseases.
Charles H. Scott.	Ohio	Dental Prosthesis.
John Sheldon	New York	Dental Hygiene.
Melville C. Sim	Ohio	Neuralgia.
George W. Smith	Pennsylvania	Operative Dentistry.
James G. Templeton	Pennsylvania	Operative Dentistry.
James T. Turner	Maryland	Extraction.
Charles Tyson	Pennsylvania	Mechanism of the Human Skeleton.
John D. Ware	New Jersey	Dental Caries and Treatment.
M. Milnor Worrall	Pennsylvania	Nitrous Oxide.

*Seneca B. Brown	Indiana.
*H. H. Martin	Pennsylvania.
*J. B. Prescott	New Hampshire.

* Having been in practice since 1852, and complied with 2d Article on "Qualifications for Graduates."

DENTAL SCHOOL OF HARVARD UNIVERSITY.

THE second annual commencement of the Dental School of Harvard University took place on Wednesday, March 9th, 1870, at the Hall of the Medical College, North Grove Street, Boston.

The address was delivered by Rev. Prof. Andrew P. Peabody, D.D., LL.D.

The number of matriculants for the session was twenty-seven. The degree of D.M.D. (Dentariæ Medicinæ Doctor) was conferred by President Charles W. Eliot, LL.D., on the following graduates:

NAME.	RESIDENCE.	THESIS.
John Thomas Codman	Massachusetts	Value of Nerves in Teeth.
William Francis Davis	Massachusetts	Orthodontia.
George Franklin Grant	New York	Chemistry of the Mouth.
Samuel Franklin Ham	Massachusetts	Manufacture of Porcelain Teeth.
Daniel Grout Harrington	Massachusetts	Inflammation.
Thomas Wilson Hogue	Scotland	Treatment of Congenital Cleft Palate.
Timothy Otis Loveland	Massachusetts	Development of the Teeth.
William Henry Noyes	Massachusetts	Prevention of Caries
George Luther Parmele, M.D.	Connecticut	Epithelioma.
William Henry Thornton	Rhode Island	Extraction of Teeth.
Frank Edward Ward	Massachusetts	Artificial Dentures.
Charles Wilson	Louisiana	Neuralgia.

NEW ORLEANS DENTAL COLLEGE.

THE third annual commencement exercises of this institution, after the usual session of four months, was held on the 10th of March, 1870, at the Dental College, corner of Carondelet and Perdido Streets, New Orleans, La.

The valedictory on behalf of the Faculty was delivered by Prof. J. S. Harrison, A.M., M.D. The class valedictory was delivered by Dr. J. B. Wasson.

There were sixteen matriculants, five of whom graduated at the session just closed, and received the degree of D.D.S., conferred by Prof. J. S. Knapp, D.D., Dean of the Faculty.

NAME.	THESIS.
John B. Wasson	Alveolar Abscess and its Treatment.
John J. Ross	Digestion.
Charles U. Sabourin	Dentes Sapientiæ.
George P. Maloney	Mechanical Dentistry.
Hugh Pierson	Adaptability of Gold or Rubber to Certain Cases.

In addition, several honorary degrees were conferred.

EDITORIAL.

PRESERVATION OF WISDOM TEETH.

There is a general impression on the part of the community, shared to a great extent by the dental profession, that the wisdom teeth are of such little value that the best thing that can be expected of them is to serve a few years and then be extracted. That this is their usual fate cannot be denied. That such *should* be the invariable result is, however, a matter of question.

The fatality attendant upon these teeth is due to causes which, if promptly removed, would insure the preservation of a large number for many years of service. This is said advisedly, and based upon a personal experience, in which a large number of such teeth were promptly attended to, and are now useful organs

A prolific cause of decay in these teeth is the slowness of their eruption; a portion of the crown emerges from under the gum, while the remainder will be covered for months, and in some instances, for one or more years, with a flap of gum. This, of course, favors the retention of fluids and solids, which, undergoing decomposition, act destructively on the enamel. The removal of these substances by the toothbrush is prevented by the overhanging gum. In addition to this, it is quite common for fissures to exist in the crowns, owing to defective formation of the enamel. A combination of such conditions very naturally produces decay of the most rapid and radical character, frequently involving an exposure of the pulp before the complete eruption of the tooth.

The first indication of the appearance of a wisdom tooth by the eruption of one of the tubercles should be promptly followed by the *complete removal* of the overhanging gum, so as to fully expose the masticating surface. This can be readily done by a properly constructed and sharp lancet. A careful examination should then be made with delicate probes to ascertain whether there are any fissures in the crown, and if so, these should be excavated and filled; impressing upon the mind of the patient at the same time that the operation is to be regarded as a temporary one.

Owing to the incomplete growth of the tooth, it would be improper to apply the usual force necessary for the consolidation of the gold. In the course of a year or two the filling can be replaced by a permanent operation. Attention is directed to this matter on account of the fact that several patients have recently reminded me of operations such as this performed for them several years ago. The importance of preserving these teeth is heightened by the excessive liability of decay and loss on the part of the first permanent molars. Their absence makes it incumbent that every effort should be put forth for the preservation of the remaining molars, so as to secure the thorough mastication of food.

J. H. McQ.

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

Convulsions during Dentition Arrested by Scarification of the Gum. Paper read at a meeting of the Edinburgh Obstetrical Society. By G. Stevenson Smith, L.R.C.S.E. (*Edinburgh Medical Journal* and *(Half-Yearly Abstract.)*—"Since Dr. Cairns communicated his able paper on the Scarification of the Gums to this Society, I have chanced to meet with two cases of convulsions in young children, in whom the violent and alarming excitement of the nervous system was completely allayed by lancing the gums.

"A. M., aged six months, a sickly-looking infant, had not been well for a day or two, and when I asked to see him he had much heat of the skin and of the head, and had vomited several times. The pulse was sharp and quick, and for twenty-four hours there had been numerous successive attacks of general convulsions. Failing to find any cause for the fits in the state of the general health, I examined the mouth, and found the lower gum red, tumid, and glistening. I divided its tense margin with a lancet, and the little patient appeared to get immediate relief. At my visit next day, I found him lively and contented, the temperature had fallen, the gastric irritation had subsided, and there had been no more convulsions.

"L. S., aged eight months, had been fretting much for some days, was hot and restless at night, had a burning head, quick pulse, and a ceaseless whining cry. I found that he had repeated attacks of convulsions; and when I arrived, he was in a state of opisthotonos, this condition having existed for several hours. Having carefully examined the child, I found nothing to account for the nervous symptoms, save that the upper gum was hot, red, and swollen. He had cut the two lower incisors. I drew the point of a lancet across the tumid gum, and next day I found that the opisthotonos had passed away very soon after the operation. There were no more fits, and the child was comparatively well. The two upper incisors made their appearance in two days, and when I saw the child the other day he was in perfect health.

"Similar cases I have frequently met with before, and the members of the Society must have had the same experience.

"In Dr. Cairns' paper three questions were put, which I shall now endeavor to answer *seriatim.*

"1st. Does scarification do any good? Does it relieve local pain or prevent and arrest convulsions, laryngismus stridulus, diarrhœa, etc.? To this I reply in the affirmative. It does relieve local pain in many a case, and how this can be doubted for a moment I am at a loss to understand. The little patient cannot speak, says Dr. Cairns, and how can you be sure that you have given relief? It seems to me, that, if we cannot interpret the feelings of a little child because it has not yet acquired the use of articulate speech, we are not well fitted to treat the diseases incident to infancy, and have yet to cultivate a most important part of our professional education. The simple wagging of a dog's

tail conveys to his master a clear and distinct expression of the feelings which animate his canine breast; and do not the calm repose, the sparkling eye, the joyful crowing of our little patients manifest their relief from suffering as decidedly as the sleeplessness, the fretfulness, and the shrill cry of pain tell of discomfort and distress? But Dr. Cairns does not believe that by abstracting blood from an inflamed part you can in the least degree either reduce or modify the inflammation. The part, he says, continues to be as red, as hot, and as painful as before. Such ideas are only to be explained on the supposition that our friend never practices local depletion, and is consequently a stranger to the beneficial effects of such a remedy. Has he never seen relief following the opening of an abscess, or the application of leeches to a swelled testicle, or to the belly in the case of acute peritonitis? If he has not, then I can easily comprehend why he doubts that the abstraction of a little blood from a congested gum can alleviate pain.

"That scarification may prevent and arrest convulsions I firmly believe, and in this opinion I know that I am supported by a perfect cloud of witnesses. Dr. Brown-Séquard has shown how easy it is by pinching or otherwise irritating certain nervous filaments in the guinea-pig to induce convulsions; and I think one can without difficulty understand how irritation of the branches of the fifth pair may produce convulsions in infants whose nervous system is so susceptible of impressions. That the convulsions in my two cases were caused in this way, and that they were arrested by relieving the congested gums, I have not the faintest shadow of a doubt. Dr. Cairns may say that the cessation of the attacks following upon scarification was a mere matter of coincidence and nothing more, and that the convulsions might have disappeared even supposing nothing had been done. This I do not deny; but I am inclined to think that, instead of ceasing spontaneously, there was a much greater probability that they would have continued. Besides, this is not, in my opinion, the proper spirit in which one should discuss the influence of any remedial measure. The progress of medical and all other science is no doubt furthered by a certain amount of wholesome skepticism, but surely it must be retarded if we doubt everything and believe nothing. As was well remarked by Dr. James Young in a previous discussion on this subject—'It is imperative, in cases of convulsions, to give every relief we have in our power, and there should be no waiting to see what nature is going to do.' I do not consider myself a heroic practitioner in any sense of the term, but at the same time I have no sympathy with those who stand idly by when something ought to be done. There is a great deal of truth and a spice of grim humor in the remark of one of the fathers of medicine, that the expectant treatment of disease is 'meditation upon death.' And I think it is highly culpable to refuse to perform so trifling an operation as scarification of the gums when we are convinced that it is in them that the source of the irritation resides.

"Dr. Cairns' second question was, Does scarification do any harm? To this I reply that, so far as my experience goes, it does not. Indiscriminate lancing of the gums cannot but be productive of mischief, but in properly selected cases I believe the operation is never followed by any evil consequences. That it may occasionally lead to fatal hemorrhage I cannot deny; but such cases are extremely rare, and can only be regarded as accidents, against which it is almost impossible to provide. The extraction of a tooth may lead to death in the same way,

but no one should on that account denounce the operation as an unjustifiable one. Besides, as Dr. Ritchie suggested, the existence of the hemorrhagic diathesis might be ascertained by inquiry as to the history of the vaccination.

"Dr. Cairns' third question was, Is scarification, under the circumstances, warrantable? He thinks it is not, because it inflicts unnecessary pain, superinduces some of those conditions which it professes to remedy, and, at the best, is a mere experiment. In regard to the two first-mentioned reasons, I have nothing further to say than merely to repeat what I have stated already, that in properly selected cases no such objection can be for a moment entertained. But he says scarification is at the best an experiment. Now, by an experiment I understand something that is done in order to discover an uncertain or unknown effect. But the effect of scarification is neither unknown nor uncertain, and therefore scarification cannot properly be called an experiment.

"We know positively that irritation of a nerve trunk may induce convulsions; and in dentition how very often do we find the trifacial excited by inflammation of the gum. The lancing relieves congestion, tension, and pain, and by allaying irritation, prevents or arrests convulsion. Such, at all events, is my belief—a belief which the experience of my seniors tends to strengthen and confirm."

Collapse from Dental Irritation.—E. J. Beall, M.D., of Marshall, Harrison Co., Texas, reports in the *Med Archives* the following case:

"I attended a child suffering the consequences of morbid dentition (you recollect the correspondence between Dr. Campbell, of Edinburgh, and Sir Marshall Hall, of England, relative to the excito-secretory nervous system), diarrhœa—rather *entero-colitis*—extreme emaciation, etc., etc., consequent upon dental irritation, carried upon a pillow for weeks, ultimately convulsions.

"I was absent, eight miles in the country, when intelligence reached me of the existence of a convulsion likely to result in the termination of life. A hurried ride carried me to the presence of the little sufferer, aged 14 months, whom I found *in extremis, cold, pulseless, large aqueous alvine discharges*, in fact *apparently dying*. 'Given up by all who saw him.'

"I directed an immediate sponge bath of hot alcohol, antispasmodics and stimulants, and, *contrary to the opinion of an associate physician and the family, extracted two incisor teeth, the cause of all the trouble.* In a short time reaction came on, and the little sufferer soon rallied from a condition considered *beyond* an extreme one, by all who saw him.

"The return to convalescence was rapid, and perfect health soon attained, contrary to the expectations of friends, and to the surprise of medical attendants. He is now two and a half years of age, *and possibly without a superior, mentally or physically*, on the continent, waiving the absence of two deciduous teeth, which we expect to be supplied at six or eight years of age, by permanent teeth.

"I do not now recollect to have seen any case reported, or recommendation made, for the extraction of the deciduous teeth at 10 or 15 months of age, when the morbid reflexions are such as to endanger life, hence do not hesitate to call your attention to the above case, and aver, that whatever others may do, that as for myself, when I shall see a

child, *skin and bones, upon a pillow, with convulsions and persistent diarrhœa, and believe the deciduous teeth the cause* of the condition, and death seemingly imminent, I shall not hesitate to extract them, hoping for results similar to the case I report."*

—

"*Sudden Death from Excitation of the Pneumogastric Nerve, of the Inferior Laryngeal, or of the Nasal Nerve.*—M. P. Bert, in a note read August 23d, 1869, to the French Academy of Sciences by M. Claude Bernard, states that when these nerves are strongly excited, sudden death may result, without convulsions; respiration and the general movements of the body are immediately arrested, and the animal dies as if from a stroke of lightning. He has thus caused death in mammifera and birds, particularly in ducks, which is an important fact, for the suddenness of the death in these last animals shows that it is not owing to asphyxia (ducks resisting asphyxia for from eight to fifteen minutes). This sudden death is hence probably the result of a cessation of action, of a sideration from too strong a centripetal excitation of the respiratory centre to which the term *vital* point, so much criticised, would be partly justified. However this may be, certain cases of sudden death following too strong excitation of the larynx (ammoniacal cauterization, small foreign bodies) to some attacks of angina pectoris may, perhaps, be thus explained."—(*Gaz. Hebdomadaire de Méd. et de Chir.* and *Amer. Jour. Med. Sci.*)

—

"*Stomatitis produced by Fermented Cheese, and cured by Lemon-Juice.*—A store servant, having good antecedents, *i.e.* having never had recourse to mercurial preparations, was brought in the service of Behier, on account of violent stomatitis. In examining the mouth, no aphthæ nor ulcerations, or grayish patches, nothing of a pultaceous nature. What was most striking was a universal brilliant redness, with loss of epithelium, without tumefaction of the tissues, covered by the mucous membranes. This was alone affected. Finally, this was a simple erythematic stomatitis, but of an exceptionable intensity.

"The patient attributed, and with reason, this buccal lesion to an excess in the eating of fermented cheese. In fact we often meet with dried and fermented cheese, particularly those of Rocquefort and Gruyère, which acquire with age irritant properties similar to those of mustard, and produce a stomatitic affection of the nature of that of which we treat.

"However, happily, this is more painful than grave. It is worthy of remark, however, that when cured, the patients preserve an extreme susceptibility of the buccal mucous membranes especially to salted aliments.

"How should we treat the stomatitis? by substitution. If we prescribe emollients, decoction of figs, marshmallow or poppy, etc., the sanguinous tufts persist with tenacity. We should then make use of excitants, alum, chlorate of potash, and beyond all, citrons. In the patient of Behier, the mouth was energetically touched in every direction with a piece of lemon. The blood flowed from the papillæ, but a notable change for the better was immediate, and the cure was complete on the following day."—(*Journal de Médecine et Chirurgie* and *New Orleans Jour. Medicine.*)

* It is probable that such cases might be as effectually relieved by local depletion, nervines, etc., without the extraction of teeth.—Z.

"*Gangrenous Stomatitis.*—R. S. Anderson, M.D., of St. Louis (*The Med. Archives*), reports two fatal cases of gangrenous stomatitis, following measles, and alludes to three others which occurred in St. Louis. These cases are published on account of the variety of the disease, its extreme severity, its rapid progress, and its resistance to all the therapeutic means employed.

" The disease is so rare that Dr. West states that he has only had the opportunity of witnessing it in 10 cases, in 8 of which the patients died. Rilliet and Barthez notice 21 cases, of which 20 died; and another French observer, M. Tourdes, has collected from different sources 239 cases, which, however, did not all occur in children, of which 176, or 75 per cent., terminated fatally. In the large majority of cases, measles is reported as the primary cause, though it has also followed typhoid fever, scarlatina, variola, and intermittent and remittent fevers."—(*Medical Record.*)

Cancrum Oris. Abstract of a paper read at a meeting of the Liverpool Medical Association by Thomas R. Glynn, M.B., Lond. (*Liverpool Medical and Surgical Reports* and *Half-Yearly Abstract.*)—"The author confined the term to those cases in which gangrene of the lips or cheeks is a prominent feature. He did not think it was of the nature of a specific disease; because,—1st It never attacks children as a distinct disease preceded by characteristic symptoms, though some have affirmed that it does. 2d. It is always the consequence of some severe illness, especially of the eruptive fevers, and, of these, measles most frequently precedes it. 3d. It is not infectious, though sometimes epidemic, but only as a consequence of the exanthemata. It very rarely attacks several children in a family simultaneously. It appears to depend upon great deterioration of the blood, springing from a general adynamic state, which may originate from many and various depressing causes. It is much more rarely met with among adults than among children, though not unknown among the former. The facts that the mucous membrane of the mouth is more liable to disease in children, and that measles occur chiefly among them, account partly for their great liability to cancrum oris. It has been known to occur at so early an age as nine days. It rarely attacks both cheeks, except as the result of mercurial salivation. Girls are most subject to it, and the majority of cases occur in large towns and manufacturing districts. It is emphatically a disease of the poor. Sometimes symptoms almost like scurvy are present, and the author expressed the opinion that it is not improbable some intimate relation may exist between scurvy and cancrum oris. He does not believe that mercury is the most common cause of the disease, as some think. He considered the gangrene to be the result of a low erysipelatous inflammation, commencing in the mucous membrane of the mouth. Gangrene of other parts may occur as complications; also pneumonia, which is very common; pleurisy, pericarditis, and other diseases of the mucous and serous membranes. The rate of mortality in cancrum oris has been excessively high. With regard to treatment, the author remarked that before applying escharotics, the general condition should be considered rather than the local. Nitric acid is useful at first, but its repeated application is injurious. Antiseptics are of great use. Tonics and stimulants constitute the proper internal treatment. The author gave the details of two cases, treated successfully by the use of chlorate of potash wash, and

the internal administration of ammonia, chlorate of potash, and bark, with beef-tea, wine, and brandy."

" *Tumor of the Submaxillary Gland.* By Dr. Talazac. (*Thèse de Paris* and *Ibid.*)—Dr. Talazac gives full reports of four cases of these extremely rare and interesting affections. The first case, from the practice of M. Verneuil at the Lariboisière, was one of simple adenoma of the gland. The diseased mass was removed partly by the knife and partly by ligature, and the patient, a woman aged fifty-eight years, made a good recovery. The second case, also from the practice of M. Verneuil, was one of scirrhus of the gland. The tumor was removed by the knife and ligature, but the patient died on the third day in consequence of hemorrhage and subsequent pyæmia. Another case was one of enchondroma in the gland, a description of which was given by Virchow. The last case, which was described by Schols, was also one of enchondroma. The growth was of firm consistence, surrounded by a layer of connective tissue, and weighed thirty-five grammes."

Harelip — On a New Method of Using Needles in the Operation therefor. By Lawson Tait. (*The Lancet* and *Ibid.*)—"What Mr. Tait proposes is, that instead of two or more needles being introduced transversely through the flaps, they should be used in this manner: Having made what incisions he deems requisite for the operation (Mr. Tait here says that he has abandoned all the fancy manipulations for the old-fashioned straight incisions, removing plenty of tissue), the surgeon is to introduce two ordinary seamstress' needles, armed with a few inches of silver wire doubled, through the flaps, in the form of a St. Andrew's cross; the point of each needle is to be introduced through the mucous membrane of the lip, about half an inch from the edge of the flap, and brought out at the middle of the incision; then introduced into the other flap at the point opposite, and brought out at the root of the ala of the nose. The needles cross in the middle of the wound. The flaps are to be carefully adjusted; then the heads of the needles to be pushed fairly into the lip, and pulled together by twisting the wires; the points of the needles are then to be cut off close to the skin, and the stumps retracted into the flaps. In this way nothing is left to 'catch,' and when the needles are removed, by untwisting the wires and pulling by them, there are no scars left.

"In the last case in which Mr. Tait used this method the parents of the child, aged seven years, say that it is scarcely possible for a stranger to tell that the child had been operated upon, and in this case there was a complete and very wide intermaxillary cleft, which Mr. Tait had previously closed."

Glossitis and Abscess on the Tongue. Cases by Henry J. Smith, L.K. Q.C.P., L.R.C.S.I., Borris-in-Ossory.—"I was consulted by a man, aged 33, of healthy appearance and stout make. His wife described to me the history of his case (as he could not articulate intelligibly himself), as follows: About two months previously, as was supposed, from the effects of a bad tooth a swelling arose under the tongue and about the jaws, which appeared to engage the sublingual and submaxillary glands. The symptoms at first appeared to be very acute, causing him much distress. He placed himself under the care of a medical gentleman in his immediate locality, and under appropriate treatment, all acute symp-

toms seemed after a fortnight to have subsided; but a stiffness about the root of the tongue, with a slight difficulty of swallowing, remained, his speech being also slightly impaired. Various remedies were given with a view to relieve these symptoms; but instead of improving they became gradually worse, and, with the advice of his medical attendant, he consulted another surgeon, who examined the case and gave the patient some medicine, to be taken daily, with a view to afford relief, and directed him to return in some days. However, finding all his symptoms becoming more urgent, he naturally became very much alarmed, and sought my opinion, when his case presented the following symptoms: he could not speak intelligibly, swallowed with extreme difficulty, the effort causing much pain and a sense of suffocation; his countenance evidenced much anxiety and distress, and he feared himself he was about to die, and that nothing could be done for him. On examining his throat externally and the parts adjoining no marked swelling was manifest, only in the mesial line, beneath the base of the tongue, where there was a well-marked tenderness and fullness. On opening the mouth it was at once observed that the base of the tongue was so enlarged as nearly to fill the space surrounding it. On catching the point of the tongue in a dry towel and drawing it forward the act caused extreme pain, but enabled sufficient view of the fauces and tonsils to be obtained to see they presented no diseased condition. On pressing the forefinger into the mouth the base of the tongue was found to be considerably thickened; and on drawing it well forward a point more yielding than the rest was discovered along the raphe. The diagnosis arrived at was that at the time of the original attack of inflammation the body of the tongue was engaged; that it ran into the suppurative stage in this situation, and that the present distress arose from a collection of deep-seated matter in this organ. After I had concluded my examination, the man and his wife were most urgent upon me to express my opinion as to whether anything could be done or not—being so long ailing, and getting worse every day, their alarm became very great. I told them at once, if my opinion as to the cause of his great distress was correct, I could afford him relief in less than a minute; but that he should allow me to make a free cut into his tongue. To this he at once agreed, and having drawn forward his tongue well, and placing his head in a forward direction to prevent matter, if there, from suddenly gushing backward, I made a free and deep incision into the swollen organ, and was gratified to find it was followed by over a dessertspoonful of matter suddenly gushing into his mouth, giving instantaneous relief to all his urgent symptoms. I saw him in a week afterward quite convalescent.

"Twenty years ago I was called to see a young man who I was informed was choking. On a careful examination I found exactly a similar state of the tongue to exist, the symptoms being, however, more urgent and more rapid in their development. I treated it similarly, and with the same result; and it was the recollection of this case that led me to so soon form a correct diagnosis in the present instance. I consider that such cases are very rare, and this brief notice of them might be of use to others if placed in similar circumstances."—(*Medical Press and Circular.*)

—

"*Salivary Fistula; Recovery after the Introduction of a Probe.* (Under the care of Mr. Pick, St. Georges' Hospital.)—In the following case the result was as satisfactory as it was unlooked for; and is

interesting inasmuch as it shows how recovery may take place sometimes in a class of cases which are found, at other times, to be most intractable and difficult of cure.

"A girl, aged about twenty, presented herself as an out-patient at St. Georges' Hospital, under the care of Mr. Pick, suffering from salivary fistula, which caused her great annoyance, and for which she was anxious to have some operation preformed.

"The history of the case was very imperfect, but it appears that, owing to some unkown cause, when a child she had suffered from an abscess of the face, and that ever since the sinus had remained open; she had had constant dribbling of clear watery fluid from it, which was increased during the process of eating, and she had suffered from dryness of the mouth on the affected side. She was admitted to the hospital with a view to some operative proceeding.

"Mr. Pick made an attempt to pass a small probe down the canal, in order to ascertain if any opening existed into the mouth; and, after employing a slight amount of force, succeeded in passing it a short distance, perhaps half an inch, but was unable to introduce it any farther in consequence of the probe being too large. The attempt was therefore abandoned until a smaller probe could be obtained.

"The following morning the patient was surprised to find that her pillow, which was always saturated with moisture, was quite dry; and, upon examination, it was found that the opening was completely closed. She remained under observation for a week or ten days, and the part remained perfectly sound. The saliva found its way into the mouth, and she entirely lost the sensation of dryness of which she had before complained."—(*Lancet.*)

Removal of Superior Maxilla.—At a late meeting of the New York Pathological Society (*Medical Record*) "Dr. Mason exhibited a specimen of the entire right superior maxillary bone, removed by operation from a patient aged 20, in the Colored Home Hospital. He had been perfectly healthy until the summer of '68, when he commenced to have a pain in the molar region of the right upper jaw, which was soon after followed by a tumor in that locality. Subsequently the teeth in the neighborhood were removed, but the growth continued to increase steadily until the time of the operation. The usual incision was made, when it was discovered that the orbital plate was involved. The periosteum was separated from this portion as far back as the spheno-maxillary fissure, a chain saw passed through the same, and the whole mass was without difficulty removed. The patient at last accounts was doing well. The tumor had been examined by several gentlemen, who declared it to be myeloid in character."

"*Calculus of Sublingual Duct, etc.*—Dr. Sayre exhibited (*Ibid.*) a very minute pointed calculus, which, by obstructing the sublingual duct of a young lady, had caused her to be in imminent danger of choking. It was removed without difficulty, and with immediate relief to the symptoms. He thought it possible that the hair of a toothbrush had been engaged at some time in the duct and formed the nucleus of a calcareous deposit.

"Dr. Watts thought that it might be a small fish-bone.

"On motion it was referred to the Committee on Microscopy."

Gold Plate with Artificial Teeth extracted from Stomach.—At a late meeting of the Royal Medical and Chirurgical Society of London (*Lancet*) "Mr. L. S. Little read the report of a case in which a plate with artificial teeth was swallowed, detected in the stomach, and extracted. A woman was admitted into the London Hospital, who, two days previously, during an epileptic fit, had swallowed a gold plate, to which some artificial teeth were attached. This produced so much irritation that no food had since been retained; and as the foreign body could readily be felt in the stomach by means of an ivory-tipped probang, Mr. Little passed an ordinary œsophageal coin-catcher, and, after several attempts, succeeded in hooking the plate, and drawing it up as far as the pharynx, where it lodged. Considerable difficulty was experienced in removing it from this situation, although this was ultimately effected, and the patient recovered without a bad symptom. The plate, which had sharp projecting extremities, measured one inch and three-quarters in length by one inch and a quarter in width, and fixed to it were three incisor teeth, one canine, and one bicuspid. The author advocated attempts at extraction in similar cases, urging that if a foreign body has passed down the œsophagus, and through the cardiac orifice of the stomach, no great difficulty will be met with in its withdrawal through the same passage, provided no force be used; and he referred to some experiments by Mr. Pollock, to show that the removal from the stomach of even a small plate by the natural efforts is very improbable.

"Mr. Pollock mentioned a case in which a similar foreign body had been ninety-three days in the stomach, and was ultimately rejected by vomiting. He described some experiments tending to show that a plate with sharp extremities would not be likely to pass either the pylorus or the ileo-cæcal valve; although a larger smooth plate would pass both with facility."

—

"'*Will it Pass.*'—An early morning in June, 1857, a gentleman called at my office in a great state of trepidation, and, almost breathless, told me that his wife had awoke with a sensation of suffocation, and desiring to swallow something which was sticking in her throat; it being so far down that it was impossible for him to get hold of it, she had, by violent efforts, swallowed it. He said it was a plate with six false teeth upon it, fastened to the back teeth by two clasps, and asked if it would pass. I inquired if was a *gold* plate, and he replied that it was.

"I, very much to his surprise and satisfaction, told him that undoubtedly it would pass. He returned to his wife, and watched for the appearance of the gold plate. In three days he came to my office and reported that the teeth had not only passed, but had been replaced and were now masticating as formerly. The wife suffered no pain or inconvenience while the teeth were passing through the bowels, and only very little pain when passing the anus. The gentleman called a few days since, and said the teeth were still doing good service, and did not lose any of their original value by 'swinging around the circle.'"—(A. B. Robinson, *Boston Med. and Surg. Jour.*)

—

"*Precautions required to be taken by those who Work with Mercury.* Dr. Pappenheim. (*Bayerisches Industrie* and *Chem. News.*)—This paper is the first installment of a lengthy memoir on the subject of the volatility of mercury, and on tests for its presence in the atmosphere, especially of workshops. It appears that living plants are so highly

sensitive to vapors of mercury that they âre the best tests for the purpose of detecting even very minute quantities of the vapors of that metal, especially when the plants are young. The effect of mercury upon plants is the decoloration of all the green parts, especially the leaves."

—

"*Tobacco.*—In a prize essay on tobacco, by Hampton Brewer, L.R.C.P., London, the author in note G quotes Dr. Hardwicke, Mr. Curgenven, Dr. Menzies, Dr. Broadbent, Mr. Hutchinson, and Dr. C. R. Drysdale, as being convinced that tobacco smoking produces palpitation of the heart; impotence, in some cases; irregularity of bowels, congestion of the fauces, susceptibility to cold, dyspepsia, amaurosis, and palsy in some cases. His essay gained him a prize of £50, given by Sir Charles Trevelyan. The work is published by Pittman, Paternoster Row, and is worth perusal. We heartily agree with the author in his opinion as to the very injurious effects of tobacco, in whatever form it may be used."—(*Medical Press and Circular.*)

—

Tobacco Smoke Injurious to Children. (*Dublin Quarterly Journal* and *Half-Yearly Abstract.*)—"The *Revue de Thèrapeutique Médico-Chirurgicale,* for 15th February, 1869, contains a paper on the effects of tobacco smoke upon children, contributed by Dr. E. Decaine. Having described his experience in relation to this matter, he concludes: 1. That the pernicious effects of tobacco smoke upon children are incontestable. 2. It produces pallor, chloro-anæmia, palpitations of the heart, diminution of the normal number of blood globules, and difficult digestion. 3. The ordinary treatment for chloro-anæmia and anæmia produces no effect so long as the habit of smoking is persisted in. 4. Children who are addicted to smoking exhibit a want of intelligence, and have a liking more or less decided for strong drinks. Children who abandon the practice of smoking before any serious organic lesions are produced, speedily recover from disorders of the system, of which even traces do not generally remain."

—

"*Pleasant Item for Smokers.*—A correspondent in New York writes us of a young man who has been for three years the victim of constitutional syphilis of aggravated character. His lips and tongue are covered with mucous patches; a most offensive odor emanates from his whole body, especially from his breath, and a caries seems about attacking the bones of the nose, etc.

"He is a cigar-maker by trade, and he has daily been making cigars since he was first attacked. No cigar is made without moistening the leaf with saliva, as every one knows who has ever seen a cigar made. Is it not more than probable that many who have smoked cigars of his make, and others similarly situated, have imbibed syphilitic poison, and then wondered how they got the disease?"—(*Medical and Surgical Reporter.*)

—

Suicide attempted by drinking Two Ounces of Chloroform.—Mr. J. R. Wells read notes of a case to the Med. Soc. of London (*Med. Press and Circ.*): "Happening to be on the spot at the time, he gave half an ounce of ipecacuanha wine and nearly a pint of cold water; vomiting immediately took place; he repeated the dose and gave milk and strong coffee. Symptoms of collapse came on; the Marshall Hall and Sylvester methods for artificial respiration were

resorted to, and lastly, the electro-galvanic current was applied to the heart. The patient ultimately recovered, much of the chloroform being evolved by the lungs. In answer to a question by the President, Mr. Wells said there was an absence of irritation of mouth and gullet.

"Dr. Sansom considered everything was done *secundem artem*, with the exception of the electro-galvanism: he considered it useless applied directly to the heart, successful only when applied to the phrenic nerve.

"The President differed from most men as to the success of the electro-galvanism, he was not so sanguine as to its effects.

"Dr. Kidd stated that great accuracy and gentleness were required in applying the current, and success was only obtained by its affecting the phrenic nerve.

"Dr. Routh had seen artificial respiration sufficient for recovery in three cases; in three others the galvanic current applied to spine and heart set up respiration.

"Mr. Gaul mentioned the case of Dr. Glover, who died from an overdose of chloroform. In his case the stomach was paralyzed, and galvanism failed to restore life, though twelve hours elapsed before death took place.

"Mr. Weedon Cooke considered position of great importance in these cases; the patient ought not to be placed in the sitting position too rapidly."

"*Death from Chloroform.*—On February 1st, Dr. Richardson gave a most important and highly practical discourse to a very large class, on the cause of death from chloroform, and the way to avert accidents and meet emergencies which may arise in the administration of this anæsthetic.

"Rapid narcotism, according to the practice of Sir James Simpson, Dr. Richardson believes to be best and safest, as this sensation is abolished without paralyzing the muscles. A pigeon was rapidly and profoundly narcotized with chloroform, and then it was shown how readily the muscles could be roused by the galvanic battery, so that the bird flapped its wings, and yet when the stimulus was withdrawn, was as fast asleep as ever.

"In another experiment a rabbit was killed by chloroform, and the thorax being then opened, the heart was seen to continue beating for many minutes, the lungs being bloodless and collapsed. This experiment showed that death by chloroform is death from the lungs and not from the heart, and the surest restorative is to inflate the lungs by artificial respiration. The muscles of inspiration fail before those of expiration, and to galvanize these last named muscles exhausts what little irritability they may still retain, and clinches the death of the patient effectually.

"Dr. Richardson rather feared to give chloroform in persons with dilated right heart and overfull veins; in other cases of tubercular disease, renal disease, and valvular disease of the heart, he had often given the anæsthetic without anything like an accident."*—(*Medical Press and Circular.*)

---

* In narcotic poisoning and asphyxia generally, the subcutaneous or venous injection of strychnia, ammonia, and other stimulants would doubtless excite cardiac action, circulation, respiration, etc. sufficiently to often save life. Thus, for instance, one-thirtieth of a grain of strychnia, with twenty drops of the water,

"*Deaths from Chloroform.*—During the year we have recorded in this journal twenty-five cases of death from chloroform. Commentary upon these figures is unnecessary. Remembering the comparatively insignificant number of alleged deaths from the inhalation of ether recorded since its introduction to the present time, and that there is not one of these 'which cannot be explained on some other ground equally plausible' (Rep. of Ether Comm. of Bost. Soc. for Med. Improvement; Extracts from *Record*, vol iv., Supplement, p. 216)—a statement undoubtedly not true as regards chloroform—we must indorse Prof. Stillé's remark (Mat. Med. and Therap., vol. ii. p. 115, 3d ed.) that 'the surgeon who employs it [chloroform] assumes a responsibility of life and death for which neither his office nor the moral law afford him any license.'"—(*Medical News.*)

"*Markings on the Teeth and Nails.*—A correspondent wishes us to direct attention to the fact that among the many interesting communications that have recently appeared in our columns on the above question, none of the writers seem to have been aware that the subject had already been brought under the notice of the profession by Dr. George Harley in an article on Apnœa in 'Holmes' System of Surgery.' Dr. Harley remarks as follows (p. 891):

"'Life, indeed, might not inappropriately be compared to a web of cloth made of the purest American cotton, and each stoppage in nutrition to a flaw. Thus each disease, each temporary illness, although not producing an actual gap, would weaken the web by introducing into it an inferior quality of cotton.—Do we not every day see around us evidence of the flaws in the human webs? Look, for example, at the teeth. Are the furrows we occasionally see across them not the telltales of the severe illness of youth? Are they other than the marks of arrested nutrition? So again with the nails. Do they not, after a smart attack of scarlet fever, indicate by their grooves the severity of the illness? Can the falling out of the hair after typhus be said to be due to anything else than temporarily arrested nutrition? Even the mind itself does not escape the general ill. Bad tissue deposited produces bad memory. Old people remember distinctly all that occurred to them in their youth, when good tissue was being laid down; but forget the occurrences of the previous day, when in old age the material is of an impaired quality. So also it is found, and for a similar reason probably, that it occasionally happens that, after a severe illness, little is remembered of what occurred during it.'"—(*Lancet.*)

Naphthaline Protective against Moths and other Insects.—Geo. F. Markoe suggests (*Proc. Amer. Phar. Association* and *Boston Med. and Surg. Jour.*) "the use of naphthaline as a substitute for camphor. It is an effective protective agent against the ravages of moths and other insects among woolens and in natural history collections.

"When purified, naphthaline is obtained in beautiful crystalline masses, possessing a strong peculiar odor, recalling the smell of coal-tar crea-

---

or five grains of valerianate of ammonia, to a half fluid-drachm of warm distilled or cinnamon water, could, without loss of time, be readily injected by the hypodermic syringe, and be repeated if necessary, while using at the same time artificial respiration and other restorative measures indicated.—Z

sote. In its crude state the crystals are of a brown color, and the odor much more intense than when purified.

"Naphthaline has been put to a thorough test by Prof. Asa Gray in Harvard College Herbarium, and in the cabinets of the Boston Society of Natural History. The results obtained in these trials were highly satisfactory, conclusively proving the value of naphthaline as a protective against the ravages of the destructive insects that infest woolens and the cabinets of museums."

"*Carbolic Acid* vs. *Alcohol for Specimens.*—At a recent meeting of the Chicago Academy of Sciences, Dr. Stimpson gave the result of three months' experiments upon carbolic acid as a substitute for alcohol in the preservation of wet specimens. He found that deliquesced crystals of the acid dissolved in forty times its bulk of water gave a fluid which equaled alcohol, in its preservative qualities, at less than one-twentieth its cost, with the additional advantage of keeping the specimen far more nearly in its original condition. In a solution of twice that strength, the specimen itself is soon destroyed. Specimens should be first placed in a very weak solution, say one-half per cent.; but as the action of the acid is very rapid, it may be daily changed for a slightly stronger one, until the full strength (two and one-half per cent.) is reached. This should be done to prevent the contraction resulting from the sudden contact of a strong solution, and preventing endosmosis. Fluids once used will be found to have lost their preservative power far more than alcohol, and must be strengthened before being used again. The freezing of the fluid may be prevented by the addition of one-eighth part of alcohol. If the smell of carbolic acid, which is very slight in the weak solutions, should be objected to, the addition of a minute quantity of the oil of wintergreen will cover it completely."—(*Cal. Scien. Press* and *Druggists' Circular.*)

"*Glycerin as a Substitute for Spirits of Wine in the Preservation of Zoological and Anatomical Preparations.*—Dr. Koller (*Chemical News*) recommends concentrated glycerin as being cheaper, not liable to evaporation, not combustible, and, moreover, as better preserving the natural color of various preparations usually kept and preserved in spirits of wine."—(*Medical Record.*)

"*Preserving Anatomical and Pathological Preparations.*—Instead of using alcohol for these preparations, a much cheaper and equally as good a method we give below: A saturated solution of common salt is made by pouring hot water upon it, and leaving it till it is quite cold. It is then filtered into a suitable glass vessel, and the specimen to be preserved is placed into it. The vessel is then tied over with a piece of bladder formerly prepared by soaking it in warm water. After a few days this piece of bladder becomes dry and hard, when it is coated over with two or three coats of black japan varnish, which renders it impervious to air and water. This completes the process, and the specimen is prepared for the museum."—(*Chicago Med. Times.*)

Iron and Steel Goods kept from Rust.—"Iron and steel goods of all descriptions are kept free from rust in the following manner: Dissolve ½ oz. of camphor in 1 lb. of hog's lard, take off the scum, and mix as much black lead as will give the mixture an iron color. Iron and steel

goods, as well as machinery of all kinds, rubbed over with this mixture, and left with it on for twenty-four hours, and then rubbed with a linen cloth, will keep clean for months. If the machinery is for exportation, it should be kept thickly coated with this during the voyage."—(*Sci. American.*)

Wood Enameling.—The *American Artisan* says: "The following is a German recipe for coating wood with a substance as hard as stone: Forty parts of chalk, fifty of resin, and four of linseed oil, melted together; to this should be added one part of oxide of copper, and afterwards one part of sulphuric acid. This last ingredient must be added carefully. The mixture, while hot, is applied with a brush."

Artificial Caoutchouc. M. Granier. (*Les Mondes* and *Chem. News.*)—"This material is a mixture containing gelatin and a variety of other substances (not specified) producing a homogeneous elastic substance, insoluble in mineral as well as vegetable essential oils; not acted upon, moreover, by either coal or other hydrogenized gases. This material is now employed in France for a variety of purposes, too many to be here enumerated; its cost is only 3 francs per kilo; and it melts readily at 100°, without decomposition, and can be cast into different moulds. Neither cold nor heat affects this substance, which, when completely oxidized, becomes more infusible than vulcanized caoutchouc."

Mica colored.—"Dr. Schwartz suggests this method of coloring mica blue for spectacles, instead of sticking colored gelatin on them, or interposing a layer of it between two of mica, as has been recommended. 'What is known by painters on porcelain as "copper lustre" is an organic compound of bismuth with a small amount of gold. When this is put on porcelain and burnt in with a gentle heat, it gives a copper-red lustrous mirror. The same solution, painted very thin and equally on the mica, and dried, may be burnt in by the heat of a spirit-lamp, and will show by reflected light the same copper-red color; but by transmitted light, as when the spectacles are worn, the color seen is a bright blue. Platinum and gold glaze, applied in the same way, and burnt in, exhibit a silvery or golden lustre by reflected light, but by transmitted show gray or greenish-blue color.'"—(*Druggists' Circular.*)

"*Mineral Substances applied for Staining Glass and Porcelain.* M. Meunier. (*Cosmos* and *Chem. News.*)—The colors applied to porcelain and glass are in reality colored glasses, which are burnt into the mass of the white glass or china. As regards the latter, in most cases, after it has been glazed, since most of the substances used as coloring matter do not stand a very strong heat (technically, in French, *grand feu*)—that is to say, the heat at which the porcelain is fired—the burning-in of the colors is effected in muffles. As coloring matters for porcelain, are used: Peroxide of iron for red (brick), brown, violet, yellow, and sepia; oxide of chromium for green; oxide of cobalt and nitrate of protoxide of cobalt and potassa for blue and black; oxide of uranium for orange and black; oxide of manganese for violet, brown, and black; oxide of iridium for deep-toned black; oxide of titanium for yellow; oxide of antimony for yellow; black oxide of copper for green, and red oxide (suboxide) of copper for red; chromate of lead for yellow; chromate of baryta for yellow; chloride of silver for red; chloride of plati-

num, and chloride of platinum and ammonium, for steel color (in fact, metallic platinum); purple of cassius for purple and rose-red color. Only the following substances stand, without deterioration or volatilization, the highest heat of the porcelain furnace (they are *couleurs grand feu*): The oxides of uranium, cobalt, chromium, manganese, iron (peroxide), and titanium. Most of the substances mentioned are not used as such in pure state, but require either to be mixed very intimately, often by a previous ignition with various fluxes, or, also, with other substances, to produce the required hue and shade of color. The chemistry of the coloring matters required by the artists who paint on porcelain is one of the most difficult and intricate portions of the application of that science to art."

"*Iron Rust.*—Dr. Crace Calvert has recently communicated to the Chemical Society the results of some curious experiments upon iron rust. Two samples analyzed by him were found to contain over 6 per cent. of protoxide, so that we must no longer consider the substance as consisting entirely of sesquioxide. His experiments seem, moreover, to contradict the current belief that the rusting of iron is entirely due to moist oxygen. Neither dry nor moist oxygen appears to have any action, and the only experiments in which the ordinary rapid oxidation of the iron was observed were those in which the metal was exposed to the joint action of water, oxygen, and carbonic acid. The same results were obtained whether the iron was immersed in air or water."—(*Med. Times and Gazette.*)

Thermo-Electricity. J. Delaurier. (*Comptes Rend.* and *Chemical News.*)—The author says: "I have proved the existence of metals and other bodies which are by themselves thermo-electric, and these I call active bodies. The production of electricity is not due to the two metals which are soldered or joined together, since a non-active metal is only a carrier of the electricity developed by heat in the active body. The cause and direction of the current depend chiefly upon the molecular structure of the active body. Heat is converted into electricity by preference in those substances which are relatively better conductors of electricity than of heat. There exist solid bodies which possess the property of yielding as much electricity as hydro-electric elements; among these, tellurium and iron pyrites stand foremost."

Silver Solder.—Mr. Alex. Allan writes to the *Scientific American:* "The best method of making silver solder may be useful to some of your readers—young mechanics especially who have not obtained the information during their apprenticeship. Put into a clean crucible pure silver two parts, clean brass one part, with a small piece of borax. Melt and pour into ingot. Formerly I used to return the solder to the crucible for a second melting, but it is not necessary. The solder flows easily and clean.

"Solder made from coin, as it frequently is, often melts with difficulty, and remains lumpy around the joints requiring the use of the file to remove it, while the addition of any of the inferior metals to the solder causes it to eat into the article joined by it."

Carbolic with Nitric Acid Explosive.—It is stated (*Med. Times and Gazette*) that "a pupil in one of the Dublin hospitals, having occasion

a few days ago to apply strong nitric acid to a diphtheritic surface, employed, as the medium, a piece of lint, which had previously been used with carbolic acid, and which he supposed to have been thoroughly cleansed by subsequent washing. No sooner, however, had the lint been dipped in the nitric acid than a violent explosion took place, severely burning the operator's face. We are happy to hear that no serious consequences are likely to result, though these were at first apprehended; but the occurrence is instructive, and worth recording as a caution in dealing with such agents."

"*Gutta-percha Vessels for Chemical Uses.*—Erroneous views have been held and circulated concerning the durability of gutta-percha under the action of various reagents. We are ordinarily told that it is absolutely unacted upon by cold mineral acids, with the single exception of the sulphuric at 1·6 sp. gr. and upwards. This is far from being the case. There is, indeed, no immediate corrosion, or other rapid and striking change; but, in course of time, the surface becomes overspread with a thin buff-colored layer, which may be easily rubbed off. This change extends gradually deeper and deeper, till the whole mass loses its coherence and splits in various directions. I have before me a number of jugs which have been used for nitric, chlorhydric, and dilute sulphuric acids, as, also, for solutions of stannous, stannic, and ferric salts, and which, in less than three years' service, have become quite worthless; on being sent for repairs to a dealer in such articles, they were returned with the remark that they 'could not be mended, as they had been used for acids.' I find that the disintegration in question can be very much retarded, if the vessels are always rinsed in cold water immediately after being used."—(J. W. SLATER, *Chemical News.*)

"*Improved Double Nose-piece.*—The microscope is such an important instrument to medical men that we think it worth while to call attention to any improvement in its mechanism which can either add to its usefulness or diminish the expense to which workers may be put in perfecting their instruments. It consists of a double nose-piece (a modification of Brooke's), adapted to carry two objectives at the same time, so that the power can be immediately changed by merely turning the nose-piece round upon a central pivot, thus saving no little trouble and loss of time which must result from screwing off and screwing on different objectives. Steel pins are placed as stops, so that the proper adaptation of the objectives is obtained. This nose-piece is exceedingly neat and accurate in working, and—what is important to microscopists—less than half the price of the ordinary nose-piece."—(*Lancet.*)

"*Liquid for Cleaning Silver-plate.*—Add by degrees 8 ounces of prepared chalk in fine powder to a mixture of 2 ounces of spirit of turpentine, 1 ounce alcohol, $\frac{1}{2}$ ounce of spirit of camphor, and 2 drachms of aqua ammonia. It should be applied with a soft sponge, and allowed to dry, before polishing."—(*Journal of Applied Chemistry.*)

"*Cement.*—The *Journal de Chimie Médicale* states that an excellent cement may be made by dissolving one part of amber in $1\frac{1}{2}$ parts of sulphide of carbon. This liquid is applied by a brush to the surfaces it is wished to unite, and on pressing them together the cement dries almost immediately."—(*Haney's Journal* and *Physician and Pharmaceutist.*)

THE

DENTAL COSMOS.

NEW SERIES.

Vol. XII. PHILADELPHIA, MAY, 1870. No. 5.

ORIGINAL COMMUNICATIONS.

IMPORTANCE OF WEDGES IN EXAMINING THE TEETH.

BY J. H. M'QUILLEN, M.D., D.D.S.,

PROFESSOR OF PHYSIOLOGY IN PHILADELPHIA DENTAL COLLEGE.

It is a notable fact, when the teeth are in close contact with each other, so that a fine strand of floss silk can with difficulty, if at all, be passed between the approximal surfaces, that even the most careful and experienced practitioners are sometimes deceived in their opinions of the condition of the teeth, and are led by the *general* appearance of integrity to pronounce organs sound which are very far from being so. While the acute and conscientious are liable to errors of judgment in this respect, still more frequent are the mistaken opinions given by the careless and indifferent. Hardly a week passes over without patients presenting themselves to operators of any prominence, stating that they have not been satisfied with the operations or opinions of some professional brother, and demanding at the same time the most thorough and rigid examination of their teeth; followed not unfrequently by the discovery of a number of cavities in the approximal surfaces. This communication has been prompted by a case in point (one of many) in which a young lady who, suspecting that her teeth had not been as well cared for as they should have been, called to have them attended to. In this instance the teeth were so close together that it was necessary to wedge them apart before an examination of the approximal surfaces could be made. The fact that the left superior bicuspids had been filled, led to the inference that those of the opposite side were decayed, although there was no evidence of it until the wedges were removed, when they were found much affected, and in a short time, if not attended to, the pulps would have been exposed. Other teeth were found in the same condition, notwithstanding that they had been pronounced only a short time before perfectly sound. The hasty manner in which examinations are generally conducted neither

affords time nor opportunity for forming a diagnosis of much value to the patient or credit to the practitioner. Sufficient time should be taken for the purpose, and with every necessary appliance at hand, oval mouth-glass, fine probes, floss silk, wedges of wood, rubber, etc., the examination should be conducted with *thoroughness* (or not at all), *and a charge made for it.* If the lawyer or the medical man is entitled to a fee for an opinion which he gives after a few minutes' investigation, the dentist certainly is entitled to one, based upon a careful and prolonged examination, which to be of any value demands acute vision, extended experience, and clear judgment. If a fee was always charged, and the duty conscientiously performed, patients would not have occasion to complain so frequently of misplaced confidence, nor suffer from the carelessness of those who, knowing better, should have discharged their part faithfully. Patients who value their teeth willingly pay for periodical examinations, which they know will be performed conscientiously by one in whose judgment and integrity they have entire confidence, and in doing so, express themselves well requited for the money expended in the assurance that everything is right.

In making such examinations, the importance of employing wedges in all cases of doubt cannot be too prominently borne in mind, for the separation thus effected affords the fullest opportunity in deciding the matter beyond cavil. Again, in every instance in which a tooth is found decayed on one side of the mouth, it is reasonable to infer that the corresponding one on the opposite side will be discovered similarly affected, and it is so rare that this evidence of symmetrical disease is not manifested that it almost amounts to an invariable law. The writer has directed attention to this fact before, and in reiterating it does so with the view of impressing it indelibly upon the minds of the younger members of the profession, for whom this article is more particularly intended.

The practice frequently adopted by professional men on finding a cavity of small size, of waiting until it gets large enough to be filled, is exceedingly questionable, when it is remembered that a small opening frequently leads to a cavity of considerable size, and when this is not the case, that a small cavity may, by inattention or forgetfulness on the part of the patient to have the teeth attended to regularly, assume, in a few months, or a year or so, such a serious character as to involve the loss of the tooth. The necessity of prompt attention to small cavities on the approximal surfaces of teeth must therefore become evident to all, either by obliterating them with the aid of the file, or, where they are too deeply affected for this, to fill them.

In conclusion, valuable as the services of the dentist may be in the preservation of the natural organs, the necessity of care and attention

on the part of the patient in this direction should be duly impressed on their minds, and that in addition to the regular employment of the tooth-brush and powder, the use of tooth-picks and flossed silk between the teeth after each meal, should be regarded by them as an imperative duty, never to be forgotten or neglected. That while it would be impossible to dispense with the tooth-brush, they could better do that than neglect the use of the tooth-pick. The quill tooth-picks furnished by the druggists in bundles, when of good quality, are well adapted to this purpose, and the patient should keep a liberal supply of these on hand.

PHYSIOLOGICAL ACTION OF NITROUS OXIDE GAS.

BY THOMAS W. EVANS, M.D., D.D.S., PARIS, FRANCE.

(Continued from page 187.)

THE stimulant effects of nitrous oxide upon the nervous centres will be best shown after a consideration of some of the more immediate and apparent subjective and objective phenomena which follow the inhalation of the gas.

I am very well aware that we cannot present a full report of those effects of which the subject may himself be conscious without at the same time indicating, more or less completely, the narcotic and anæsthetic action of the agent. Nevertheless, it may be remarked that the stimulant effects of anæsthetics are most completely developed during a period in which the consciousness, though perhaps giddy, is still undethroned, while the narcotic effects of these substances are, for the most part, quite beyond the reach of subjective cognition. For this reason it has seemed expedient to introduce, at this stage of our inquiry, a record of those phenomena which the subject may himself observe when inhaling nitrous oxide. And I do this with a full recognition of the errors to which this special method of investigation may lead,—that it has ever been the untiring and almost unconquerable champion of the most inveterate and grotesque delusions.

It is certainly questionable, whether, under the most favorable circumstances, it is possible by *introspection* to gain a very accurate knowledge of psychological phenomena. "If the soul," says Platner, "were in the place where it *feels* to be, it would be in the act of seeing out of the body."* The brain, moreover, never works as a whole; and, consequently, its operations can never be seen as a whole. The attention, also, holds in subordination the mental faculties, and never can be exercised without reducing many to a condition of comparative or absolute passivity, while the activities of one may be powerfully

* Phil. Aphor., i. p. 81.

excited. Hence we cannot think normally and *watch* ourselves while thinking. Not only this, but the nervous elements in general vary their susceptibility to exterior influences according as they are more or less under the control of the attention.

Every one is familiar with striking examples, recorded in general as well as in medical literature, in which sensibility, sight, hearing, and all the special senses have been thus modified. Others may remember equally illustrative instances in which ether, alcohol, and opium seem to have acted as inert substances on a preoccupied brain.

Bouisson narrates the case of a young soldier, who, feigning disease, was placed by him under the influence of ether, in the expectation that he would be induced thereby to avow his deceit. Insensibility was produced, but the intelligence of the man was unaffected. "He played his part so well, as a dissimulator, as never to respond to any question in such a way as to compromise himself."* So M. Gerdy, in a very interesting account which he has given of the effect of ether upon himself, says: "My lids seemed heavy. I wished to sleep, and above all to abandon myself to the charm which intoxicated me. Nevertheless, whether it was because these phenomena had obtained their maximum development, which I can scarcely believe, or because I *wished absolutely to observe myself to the last moment*, I did not abandon myself to the seduction which was fascinating me, and I did not sleep. I continued then to observe myself, and, after I had examined my sensations, I directed my attention to my intelligence. I remarked immediately, that, with the exception of certain vibratory sensations which generalized my sense of touch and blunted the sense of pain, and with the exception of a roaring in the ears which prevented my clearly distinguishing what I heard, my perceptions and my thoughts were very clear and my intelligence perfectly free."†

Doubtless, in this case, the etherization was very incomplete; still, there is reason for believing that the intellectual condition of the experimenter was greatly affected by the activity of his attention, and the firmness of his purpose to study his own mental state.

But if, by fixing the attention, we are unable to obtain trustworthy information concerning our own consciousness, and if a fixed attention reacts upon the special excitability of the sensory ganglia, predisposing or indisposing them to respond to stimuli from without,—it is even more certain, when stimulation and narcotism may have been pushed so far as to disturb the correlation of the cerebral functions, which is indispensable to healthy, psychical activity, that the subject fails to continue a competent observer of his own sentiments and sensations.‡

---

* Bouisson. Traité de la Méthode Anesthésique, p. 228. Paris, 1850.

† Bulletin de l'Académie, tome xii. p. 304.

‡ "The presence of alcohol or some other such foreign agent in the blood,

If the subject is an incompetent witness of his own subjective condition, he is still more incompetent to describe to others the distinctive ways in which his consciousness may have been affected by certain associations of ideas and sensations. The memory but very imperfectly recalls mental conditions, and recollections of the pains and pleasures of sense are always feeble; while any new condition or new sensation can only be made comprehensible by associating it with terms which express or suggest analogous states of consciousness.*

Most curious and amusing illustrations of the truth of these statements can be found in any dental "case-book" in which may have been preserved the patient's own account of his sensations while under the influence of nitrous oxide. The accounts are not only remarkable for their general vagueness, but from the fact that the similitudes used are almost without exception ideal, and refer to sensations and states never experienced and often impossible. One of the most common replies I have got to my question, "Well, how did you feel during the operation?" has been, "Oh, I don't know, doctor; I felt as if I was in heaven!" which, I presume, if it means anything, means that the

---

will excite into activity ideas which lie out of the usual path of association, which the utmost tension of consciousness would fail to arouse, and which the will cannot repress or control. * * * Thus, consciousness can never be a valid, unprejudiced witness; for although it testifies to the existence of a peculiar mental modification, yet, when that modification has anything of a morbid character, consciousness is affected by the taint and is morbid also."—Maudsley, Physiology and Pathology of Mind, pp. 23-5. London, 1869.

* Probably on no point do metaphysicians and physiologists more entirely concur than on this, that the recollection of past pleasures and pains is almost impossible. Various reasons, teleological and other, have been offered for this fact, which is really much weaker and less remarkable than it seems to be.

In the first place, in remembering a pleasure a person can no more *resense* the pleasure than when remembering the sum of money he may have paid for it he can *rehandle* the money Nor can he even recall the impression made upon his consciousness either by the pleasure or the money. All that he can do is, to evoke at will the *spectral image* of an impression once felt, which shall be more or less visible to the consciousness, and more or less comparable with the spectre left behind by like impressions.

But the fact still remains, that we remember badly our pleasures and pains. Its explanation seems to be this: Our memory of impression is never exactly proportionate to the force with which the impression strikes the consciousness, but is always proportionate to the *difference* which we perceive between one impression and another of the same class. We have little power to perceive differences between sensations of the same class when either very pleasurable or very painful. These two propositions explain the fact. The memory is really not at fault. The fault is one of *perception*, since we are never capable of distinguishing, with any exactness, the relation of greater and less between two great pains or two great pleasures existing at the same moment, and consequently compare badly the *spectre* of each of these two classes of impression.

person so responding felt very happy. Others have described the sensations experienced as similar to those occasioned by being "shot out of a gun," or which one must have should he dream that, "hitched to the tail of a comet," he had traversed, in a few moments, the entire orbit of one of those fast traveling and erratic bodies. Singular as it may seem, these immensely accelerated movements appear neither to surprise nor act in any way upon the consciousness except as gentle and grateful stimulants. The *voyageurs* generally report their sensations as indescribably pleasant. A great many, for the first time in their lives, have "heard the songs of the angels;" and one person of a musical turn of mind, when asked how he felt after he had inhaled the gas, said,—so Sir Humphry Davy tells us,—"Why, I felt, sir, *like the sound of a harp*." These examples are quite sufficient to indicate the value we must assign to subjective testimony, communicated, as it must always be, by means of words and phrases which have no constant and common meaning, or by a reference to similitudes which are always imaginary and generally impossible.

Still, however incompletely the phenomena of consciousness may be represented to us by introspection, and however justly therefore, so far as it may concern a science of psychology, that method of inquiry might very properly be relegated to the limbo of scholastic metaphysics, there are many circumstances in the presence of which it furnishes us with most valuable evidence; particularly is this true when we are able to submit such evidence to the test of objective research. It may help us greatly to explain the action upon the human organism of substances possessing constant stimulant or narcotic properties, by showing how conscious sensation and sentiment vary with the direct power of the agent, or according to the quantity in which it is present in the circulation. Moreover, the inaccuracies which may be inseparable from a single observation must be reduced in proportion as the number of observers and of observations is increased, and the general concurrence of the testimony, as regards the character and order of the effects experienced, must be accepted as sufficient evidence of their reality.

One of the best accounts of the effects experienced by the subject on inhaling nitrous oxide gas is that given by Sir Humphry Davy, in his "Researches upon Nitrous Oxide," first published in 1800. Davy was a poet as well as a chemist and discoverer, and he has described with force and enthusiasm a class of impressions which, pleasurable in a high degree, possessed for him the additional charm of novelty. I shall quote some of the principal passages from his original account.*

Describing his second experiment with the gas, Davy says: "The

* The "Researches on Nitrous Oxide, etc.," can be found in vol. iii. "Works of Sir Humphry Davy." London, 1839. It is from this edition that I quote.

first feelings were similar to those produced in the preceding experiment, a feeling analogous to that produced in the first stage of intoxication; but in less than half a minute, the respiration being continued, they diminished gradually, and were succeeded by a sensation analogous to gentle pressure on all the muscles, attended by a highly pleasurable thrilling, particularly in the chest and extremities. The objects around me became dazzling and my hearing more acute. Toward the last inspiration the thrilling increased, the sense of the muscular power became greater, and at last an irresistible propensity to action was indulged in. I recollect but indistinctly what followed; I know that my motions were various and violent." After other experiments, he says: "I found, whenever the operation of the gas was carried to the highest degree, the pleasurable thrilling, at its height about the middle of the experiment, gradually diminished; the sense of pressure on the muscles was lost; impressions ceased to be perceived; vivid ideas passed rapidly through the mind, and voluntary power was altogether destroyed, so that the mouth-piece generally dropped from my lips. My inspirations became deep in proportion as I breathed the gas longer; but this phenomenon arose from increased energy of the muscles of respiration, and from a desire of increasing the pleasurable feelings."

On another occasion, wishing to ascertain the effects of nitrous oxide when largely diluted with atmospheric air, Davy shut himself within a small box, into which, from time to time, several gallons of the gas were introduced. To this experiment he subjected himself for one hour and a quarter. The first effects noticed, though not immediately, were "a sense of exhilaration, similar to that produced by a small glass of wine, and a disposition to muscular motion and merriment." Afterward, as the experiment was continued, the disposition to laugh increased, and, to continue the account in the words of the writer, "luminous points seemed frequently to pass before my eyes; my hearing was certainly more acute, and I felt a pleasant lightness and power of exertion in my muscles. In a short time the symptoms became stationary; breathing was rather oppressed, and, on account of the great desire of action, rest was painful. A moment after having left the box, I began to respire twenty quarts of unmingled nitrous oxide. A thrilling, extending from the chest to the extremities, was almost immediately produced. I felt a sense of tangible extension, highly pleasurable, in every limb; my visible impressions were dazzling and apparently magnified. I heard distinctly every sound in the room, and was perfectly aware of my situation. By degrees, as the pleasurable sensations increased, I lost all connection with external things; trains of vivid visible imaginations passed rapidly through my mind, and were connected with words in such a manner as to produce perceptions perfectly novel. I lived in a world of newly connected and newly modi-

fied ideas. I theorized, I imagined, I made discoveries. When I was awakened from this semi-delirious trance by Dr. Kinglake, who took the bag from my mouth, indignation and pride were the first feelings produced by the sight of the persons about me. My emotions were enthusiastic and sublime, and for a moment I walked about the room perfectly regardless of what was said to me. As I recovered my former state of mind, I felt an inclination to communicate the discoveries I had made during the experiment. I endeavored to recall the ideas—they were feeble and indistinct; one collection of terms, however, presented itself, and, with the most intense belief and prophetic manner, I exclaimed to Dr. Kinglake, 'Nothing exists but thoughts! The universe is composed of impressions, ideas, pleasures, and pains!'"

In another place he observes: "I have often felt very great pleasure in breathing it (nitrous oxide) alone in darkness and silence, occupied only by ideal existence. In two or three instances, when I have breathed it amid noise, the sense of hearing has been painfully affected even by moderate intensity of sound. The light of the sun has sometimes been disagreeably dazzling. After excitement from moral and physical causes, the delight has often been intense and sublime. On May 5th (1799), after walking for an hour amid the scenery of the Avon, at this period rendered exquisitely beautiful by bright moonshine, my mind being in a state of agreeable feeling, I respired six quarts of newly-prepared nitrous oxide. The thrilling was very rapidly produced; the objects around me were perfectly distinct, and the light of the candle not, as usual, dazzling. The pleasurable sensation was at first local and perceived in the lips and about the cheeks. It gradually, however, diffused itself over the whole body, and in the middle of the experiment was so intense and pure as to absorb existence. At this moment I lost consciousness."

It is scarcely remarkable that the announcement that properties such as these were possessed by a gas which had previously been regarded as inert or irrespirable, should have at once made it a subject of great interest to a large class of inquirers. Davy's experiments with the gas were frequently repeated in England and on the Continent of Europe; and as we are indebted to-day to these first observers, who wrote seventy years ago, for nearly all the written details which we may possess concerning the action of the gas, when inhaled, upon the intelligence and the consciousness, I shall take the liberty of quoting from a few of the most important reports then made.

Mr. Tobin, a friend of Sir Humphry Davy, says: "I soon found my nervous system agitated by the highest sensations of pleasure, which are difficult of description; my muscular powers were very much increased, and I went on breathing with great vehemence, not from a difficulty of inspiration, but from an eager avidity for more air (gas).

When the bags were exhausted and taken from me, I continued breathing with the same violence; then, suddenly starting from the chair and vociferating with pleasure, I made toward those that were present, as I wished them to participate in my feelings." In his record of another experience, the same observer says: "It is not easy to describe my sensations; they were superior to anything I had ever before experienced. My step was firm, and all my muscular powers increased; my senses were more alive to every surrounding impression; I threw myself into several theatrical attitudes, and traversed the laboratory with a quick step. My mind was elevated to a most sublime height. It is giving but a faint idea of the feelings to say that they resembled those produced by a representation of a heroic scene on the stage, or by reading a sublime passage in poetry when circumstances contribute to awaken the finest sympathies of the soul."

Dr. Roget's account is as follows: "The effect of the first inspiration of the nitrous oxide was that of making me vertiginous and producing a tingling sensation in my hands and feet; as these feelings increased, I seemed to lose the sense of my own weight, and imagined I was sinking into the ground. I then felt a drowsiness gradually steal upon me, and a disinclination to motion; even the actions of inspiring and expiring were not performed without effort; and it also required some attention of mind to keep my nostrils closed with my fingers. I was gradually roused from this torpor by a kind of delirium, which came on so rapidly that the air-bag dropped from my hands. This sensation increased, for about a minute after I had ceased to breathe, to a much greater degree than before, and I suddenly lost sight of all the objects around me, they being apparently obscured by clouds, in which were many luminous points, similar to what is often experienced on rising suddenly and stretching out the arms after sitting long in one position. I felt myself totally incapable of speaking, and for some time lost all consciousness of where I was or who was near me. My whole frame felt as if violently agitated; I thought I panted violently; my heart seemed to palpitate, and every artery to throb with violence; I felt a singing in my ears; all the vital motions seemed to be irresistibly hurried on, as if their equilibrium had been destroyed and everything was running headlong into confusion. My ideas succeeded one another with extreme rapidity; thoughts rushed like a torrent through my mind, as if their velocity had been suddenly accelerated by the bursting of a barrier which had before retained them in their natural and equable course. This state of extreme hurry, agitation, and tumult was but transient. Every unnatural sensation gradually subsided. I cannot remember that I experienced the least pleasure from any of these sensations; I can, however, readily conceive that by frequent repetitions of

the experiment I might possibly even receive pleasure from the same sensations."*

Pictet, the celebrated paleontologist of Geneva, thus describes his impressions: "At the third or fourth inspiration, I entered upon a rapid series of sensations, both new to me and difficult to describe. The principal effect was in the head; I heard a buzzing; the objects around me became larger; it seemed to me that my head was rapidly growing big. I now saw only through a mist; I thought that I had left this world and had risen into the empyrean; I was nevertheless very glad, as I now perfectly recollect, to feel that my friends were about me, particularly Count Rumford, who observed, as was agreed upon, my pulse, which became so irregular as to render it almost impossible to count it. I now stopped breathing the gas, and entered upon a state of calm approaching languor, but extremely agreeable. Far from seeking muscular activity, all movement was disagreeable to me; I experienced, in an exalted way, the simple sentiment of existence, and I wished nothing more."†

In analyzing these accounts, we shall observe that, with a few differences, they very closely correspond, as they also do with the verbal accounts with which we are daily familiar. The agreement in the most essential points is certainly remarkable, especially as the reports were not based upon any prearranged or rigid order of investigation, and concern, for the most part, first experiments, when the subject could not have learned by practice to establish the exact order of sequence of impressions which, differing in nature and force, rapidly succeed each other within a period of time limited to a few seconds. By carefully recombining them, therefore, we may obtain a very just idea of the action of the agent employed upon the phenomena of consciousness.

I must particularly direct attention to several important points. All acknowledge, at an early stage, a consciousness of increased muscular power, or a loss of the sense of weight, which is quite the same thing; they all either say or do not deny that they were at the same time conscious of an increased susceptibility to the impression of special sense; they all, a little later, represent, either directly or indirectly, the ideational nervous centres to have been greatly excited; and they all acknowledge themselves to have become finally nearly or quite unconscious. Three represent the sensation of pleasure as great, and difficult

* For these accounts, see vol. iii. Works of Sir H. Davy, already referred to. Eighteen letters on "details" are therein published, giving personal experiences while under the influence of nitrous oxide, including one from Robert Southey and one from S. T. Coleridge. They all agree wonderfully, and only seem to differ by omission. To compare I have selected the completest and most comparable.

† Demarquay, Essaie de Pneumatologie Médicale, p. 844. Paris, 1866.

to describe; while one of the three, Pictet, refers this sensation to an exalted, though "*simple sentiment of existence.*" One alone, Dr. Roget, observes: "I cannot remember that I experienced the least pleasure from any of these sensations." This, however, is a difference rather apparent than real, and depended, as I may take the occasion elsewhere to show, upon the mental constitution of Dr. Roget, as he himself suspected, rather than upon any essential difference between the sensations experienced by him and those experienced by the other observers.

It is, moreover, curious to note differences in the form of the expressions used, which even prove the identity of the sensation felt. Thus, Dr. Roget says: "I seemed to *lose the sense of my own weight*, and imagined I was *sinking* into the ground." Pictet, on the other hand, saying nothing about the loss of his sense of weight, imagined he had *risen* into the empyrean. Now, the causes of the sensation of *sinking* and of the sensation of *rising* were one and the same; the "muscular sense" had been disturbed, and Dr. Roget has very happily indicated this by saying, "I seemed to lose the sense of my own weight." So, also, Sir Humphry Davy, when he speaks of a sensation analogous to a gentle pressure on all the muscles, although seeming to allude to a feeling quite antagonistic to that which we are considering, really refers to one of the first symptoms of an altered sense of contact and of weight. Subsequently he seems to have recognized the nature of the sensation, for, instead of associating with the thrilling and the sense of muscular power a sense of pressure, he says: "I felt a pleasant lightness and power of exertion in my muscles. * * * I felt a sense of tangible extension, highly pleasurable, in my limbs," etc. These two sensations—that of *lightness* and *tangible extension*—have only to be exaggerated a little, when the subject will seem either to *rise* or *sink*, according to his fancy, and to have been completely absolved from his relations with the grosser properties of matter.

(To be continued.)

HEAVY GOLD FOIL.

BY C. E. FRANCIS, D.D.S., NEW YORK.

Dentists are truly a progressive class of individuals; as a profession, young, and full of life and enthusiasm. They do, however, sometimes much resemble a flock of sheep. A leader leaps over the wall, and away go the others in full pursuit, many in their zeal fairly overreaching the first in the start. Bold innovations are absorbed almost as quickly as announced, and new ideas are often put in full practice, regardless of expediency, or before fully discussing their merits. Our march is onward, and we glory in the world's tide of progress;

but should not "progress" be of the genuine stamp, that makes no false steps? "Advance" is an excellent watchword, but a sufficient amount of caution is requisite to insure safety to our movements.

The use of "heavy gold foil" for filling teeth is the great question which is now agitating the dental world. "Sponge" and "crystal" gold, "fibrous," "shredded," and "plastic" gold have all had their day, and each in turn created a sensation. "Adhesive" and "non-adhesive" foils have each been cried and decried. Talk about gold excitements,—what is an excitement among the brokers of Wall Street compared to an excitement among our modern dentists?

We have waded through the entire list of preparations, given them all a trial, then returned to our first love, gold foil. From the old standard numbers, 5 and 6, we gradually worked down to 4, 3, and 2, and imagined we were progressing nicely. But, presto! No. 10 is suddenly advocated, then 20, quickly followed by 60, 120, 240, and 480!

What an excitement it has caused! It is all "heavy foil." Our journals publish it, our societies discuss it, our depots are stocked with it. Every dentist you meet speaks of it, and nearly every one you visit will exhibit specimens, and explain *his* method of manipulating it. Its advocates exclaim "Eureka!" as they mallet in their heavy cakes of gold, and admire the glistening surfaces of their highly-polished fillings. Nothing else will answer now. Those who still cling to light foil are "old fogies." What rapid strides we have made!

Now let us look into this matter, and see what advantages heavy foil possesses over light foil. I have pondered the question over and over again; have made repeated inquiries of others in regard to their experience with it; have used it in a number of cases myself, and have seen it manipulated by others; yet at the present time am not convinced that heavy foil will wholly supplant the use of the light numbers.

It is claimed by those who advocate its use that 240 adhesive gold is "soft as lead," and will make more "solid" fillings than No. 3. How can the thickness of the sheet affect the quality of the metal? Is No. 6 softer than No. 3? or 480 softer than 60? I think not.

Now as to the other claim, density. Do the fillings of our modern operators lack this quality? Even where the *lightest* adhesive foil is packed under mallet influence I do not believe such is the case, except in submarine operations.

When failures occur, what is the condition of things? Do our fillings crumble out in small pieces or tumble out in a single lump? Failures are common enough, even among our best operators; none are infallible, whatever their boast. Many beautifully-finished fillings, which have cost hours of faithful labor to complete, and have caused a gleam of

pride to flash from the eyes of their admiring constructors, have ultimately proved no better than loose bullets.

Do such failures result from a lack of density in the material used, or its want of *adaptability* to the walls of the cavities in which it is condensed? Why is it that tin foil and gutta-percha stoppings so faithfully preserve the walls of cavities, in many cases even better by far than gold or amalgam? It is simply because of their better adaptability to the calcareous structure against which they are packed. These fillings seldom fall out, but rather wear out, if much exposed to attrition. Well consolidated gold plugs, and amalgam fillings, on the contrary, rarely ever *wear* out, but too many of them become loose and fall out.

We want durable fillings, such as will neither wear out nor fall out. Will heavy foil meet our desire? For myself, I must say that neither theory, observation, nor individual practice has as yet convinced me that heavy foil is as safe and reliable for filling teeth as light numbers. I admit that No. 240 gold ribbon makes a beautiful surface, when well polished, but I have also seen beautiful surfaces produced where No. 3 foil was used. The former may be better for facing surfaces than the latter, but I can see no other advantage it possesses. From all I can learn, it ordinarily requires more time to fill with 120 than with 3 or 4, and greater force to consolidate it. If I was to line or compactly fill a nautilus shell with paper, I would not use pasteboard; a piece of thick gold placed against the concave surface of a cavity will present a series of corrugations all along its margin, requiring considerable force to planish down smooth and tight; and I sometimes doubt if it can, in the majority of cases, be perfectly adapted to the walls of the tooth without using force enough to endanger or injure its structure. I may be mistaken in my surmises, but will not feel surprised if in some future time (not far distant) our eyes will be saddened at the frequent discovery of loose gold fillings—good heavy plugs, perhaps, but treacherous and leaky.

I would suggest to those who are beginning to use the "ribbon," to use it cautiously; your fillings may present a fine appearance, but they have not had the test of *time*.

PERMANENT SETS OF ARTIFICIAL TEETH.

BY D. L. OVERHOLSER, M.D., LOGANSPORT, IND.

There are several points which seem to me of considerable importance in regard to so-called permanent sets of artificial teeth, which are seldom if ever alluded to in either the dental periodicals or societies, and in regard to which the only text-book I have upon the subject

is unsatisfactory. Among these is the length of time that should elapse between the extraction of teeth and the insertion of artificial substitutes. The instructions I have seen upon this subject seem to be based upon the idea that after a certain period, varying from six months to two years, or an average of about a year, all changes affecting the fit of a plate cease. That this is a fallacy it requires but little observation to prove. Who has not frequent opportunity of seeing mouths which, in consequence of having been for a long time without teeth, have undergone changes that make the insertion of satisfactory substitutes very doubtful? That the wearing of plates lessens these changes can scarcely be doubted; but that they generally continue in some degree, even with the use of plates, seems to me equally beyond doubt. There probably are exceptions, but I do not remember ever seeing a plate that had been worn from five to ten years that fitted as tightly as a new plate ought to. If, then, there is no time when the "gums" become unalterable, how long is it necessary to wait to avoid the consequences of rapid change? I have no exact data from which to determine this point definitely, but probably every dentist of experience has observed numerous instances where temporary sets, inserted in from two to four weeks after extraction, were worn year after year,—in some cases, to be sure, after they ceased to be comfortable, but in other cases where they continued quite satisfactory. So often have the people observed this that, where the foolish practice of inserting temporary sets for a mere nominal sum still obtains, patients frequently expect from the first to escape the expense of a permanent set. If a set of teeth, no matter when inserted, is useful a year after extraction and afterward becomes useless, it is evident that the trouble arises in part from changes occurring more than a year after extraction. My general observation has led me to believe that, ordinarily, rapid changes do not continue beyond three or four months after extraction, and consequently that is sufficient time to wait for the insertion of permanent sets.

Another important question is, How long do permanent sets of artificial teeth on an average last? The question is of practical importance, as having a bearing upon an evil cherished by many in and out of the profession,—namely, that of neglecting or sacrificing natural teeth for artificial. Persons frequently neglect their natural teeth, on the supposition that it will cost them much less to have them removed and artificial ones substituted than to have them preserved. While this supposition may be correct in some cases, still, it is evidently based upon the false assumption that if once an artificial set is secured there will be no further expense while they live. In fact, a lady told me once that a dentist had insured her gold set for her lifetime; and, if I remember rightly, he had made her the second set on gold; and later, rubber came to his relief and was used for a third set, he taking the gold.

Webster says: "Permanent is equivalent to durable or lasting, but not to undecaying or unalterable." If it meant the latter, it could certainly not fairly be applied to artificial teeth in their relations to the mouth. Changes in the mouth affect the continued usefulness of a plate in two ways: first, by making it difficult or impossible to retain it in place; and secondly, by depriving it of proper support, it is liable to break from the increased strain of mastication. This I believe to be a very frequent cause of breaking of plates in the mouth, of whatever material they are made.

To these causes must be added the various accidents to which they are liable out of the mouth, and the recklessness with which some persons use them. I have no statistics from which to form an estimate of the average duration of permanent sets, but my impression is that full sets on rubber average from five to eight years; partial sets on the same base considerably less, and whole sets on gold somewhat more,—say ten years. Suppose, then, a person neglecting his natural teeth on the score of economy, begins with a partial set, which he may find it necessary to have replaced before desiring to part with all his teeth; later he gets an entire set, which, in addition to occasional repairs, requires to be renewed every five or ten years; and the financial argument—that which to him is the most weighty—will upon examination be found less favorable to artificial teeth than it seemed at first sight.

Another question worthy of attention is this: Are not those changes which are constantly going on in the mouth destitute of natural teeth, even where substitutes are worn, liable, if commenced early in life, to become so great before old age is attained as to make the continued use of artificial teeth impracticable? If so, it ought to be known, as it might tend to check recklessness in regard to the natural organs.

The above has been written rather to get an expression from others upon the points involved than to determine them myself, and I hope I may not be disappointed.

THE OXYCHLORIDE OF ZINC TREATMENT FOR EXPOSED PULPS.

BY W. H. WAITE, D.D.S., L.D.S., LIVERPOOL, ENG.

Observing the amount of attention which is being paid to the preservation of vitality in pulps already exposed by disease, and feeling that, while many are experimenting in this direction, every individual fact in reference to the success or failure of the treatment is of importance, I am induced to record the following case, which has just occurred:

Mr. D., a gentleman of 30 to 35 years of age, applied to a New York practitioner of some repute, about six or eight weeks ago, to have his teeth put in order previous to a tour in Europe. Two bicuspids had exposed pulps, and, after the cavities had been prepared, fillings of oxychloride of zinc were introduced, and Mr. D. was requested to call on his

return, in three or four months, when permanent gold fillings were to be inserted. Whether the pulps were "sopped with creasote" or not, I was unable to learn; but they commenced to give trouble almost immediately, and what with a stormy passage over the ocean, occasioning considerable sea-sickness, and the pain from these two pulps, the patient appeared to have had a roughish time of it. On his arrival in Liverpool, almost his first anxiety was to obtain relief; and having been recommended to me by the owners of the steamer, he made his appearance, wearing a very distressed countenance.

The symptoms, gathered from a cursory examination and his description, were decidedly those which we recognize as resulting from a *dying pulp*,—gnawing pain, unaggravated and unrelieved by the ordinary excitants,—and, sure enough, on removing the excellent fillings of oxychloride, I discovered that, in one case distinctly, the bulbous portion of the pulp was suppurating, whereas the portion just within the canal was quite lively. The patient clamored for relief; and seeing that he was likely for some time to be a bird of passage, I deemed it advisable to apply the arsenical paste at once to each pulp; the result of which was that I had the satisfaction of seeing him leave the house free from pain, and with quite a different look to that with which he entered. Two days afterward I heard that he was still luxuriating in freedom from all suffering; but he left the neighborhood, and I can trace the case no further. I am watching with peculiar interest the progress of this conservative treatment of the pulp, and am able to record a few cases of my own, which, so far as I know, are successful hitherto; but in establishing the merits of any new method, the great desideratum is to obtain *facts*, from which, in process of time, something like general principles may be deduced; without such record, and a comparison of one man's experience with that of another, our theories are liable to lead us into very uncertain and unsatisfactory regions.

CAPPING PULPS.

BY K. J. P., NEW YORK.

As many exposed pulps of teeth are covered with osteoplastic previous to the introduction of a permanent filling, permit me to present the method adopted by me, by which the plastic filling may be applied directly to the pulp of the tooth, so as not to deface the sides of the cavity, nor to require the removal of any of the osteoplastic for the permanent filling: I take a small quantity of the osteoplastic upon the end of a spatula, and place it at the orifice of the cavity; then, with a small, round pledget of cotton or spunk, held by the tweezers, force the filling directly to the desired spot. No further scraping or cleaning is necessary. If amalgam is to follow, fill instantly; if gold, let it remain until sufficiently hardened to admit of the necessary pressure.

INTERESTING CASE IN PRACTICE.

BY H. W. LADD, D.D.S., NEWPORT, ME.

Mr. ——, aged 22, good general health, auburn hair, blue eyes, ruddy complexion, called upon me, and I extracted the roots of the right superior first bicuspid, the crown having decayed and broken off previously even with the gum without having been a cause of pain.

The roots came easily away, bringing with the palatal root a tumor three-eighths of an inch long, of a pale fleshy color, with a canal running through it, apparently a continuation of the pulp-canal of the root. The root and tumor at the end of it measured five-eighths of an inch. My attention was drawn by the patient sucking the alveolus of the tooth, and producing a noise in the nose. On closing the mouth and posterior nares, and blowing, the air could be distinctly heard passing into the nose; and a careful examination showed that a probe could be passed up the palatal side of the socket one and one-eighth inches from the margin of the gum, where it stopped upon some fleshy-feeling substance pointing toward the antrum.

Water thrown up the socket remained until sucked down, and finally, having syringed the cavity full of water, I directed the patient to close his mouth and posterior nares, and blow, and the water and blood came pouring out of the right nostril.

All the further history of the case I was able to elicit was that for nearly every morning in the spring, for some two years,—the patient was a little misty as to time; he could not say whether two or three years,—he would have a discharge of bloody matter from the nose. Has also had severe attacks of hemorrhage from the nose, and, at times, some soreness in the anterior superior portion of the malar bone of the right side.

The tooth, so far as he could remember, had never given him trouble, and was removed at the end of some other operations in plugging, as he was going into the woods for the winter, and feared it might ache while there.

The patient left the next morning for Moosehead Lake, promising to call on me in the spring.

EXPLOSION OF A VULCANIZER.

BY SAMUEL M. SMITH, MONROE, WIS.

I have to report to you one more "explosion of a vulcanizer," which took place in the early part of the evening of the 16th February, at the office of William Clarno, in this place. I inclose sample of the machine (one of Hayes' boilers, not iron-clad), which had been in use a long time. In this case the dentist took the *precaution* to set it *into the top*

of his office stove, while he took tea in an adjoining room—after having noted the thermometer as registering 310, with a slow wood fire; in other words, *doing finely.* Three minutes later the vulcanizer was *non est,* and old iron, bits of plastering, half-burnt wood, sections of teeth, and office furniture, were sadly mixed. No blame, of course, can be attached to the engineer. In this case no lives were lost, but the power of steam was demonstrated to at least one individual; and in hopes it may prove valuable to any who are in the habit of leaving their vulcanizers in the stove, while taking tea, I send it to you.

Speaking of vulcanizers, Dr. L. A. Nearing, of Syracuse, N. Y., and myself, had each a vulcanizer constructed of cast-iron some 12 years ago. They were made very heavy, and mine was ground steam-tight in the cover. It never has needed *any* packing, and is apparently all right; and, at last accounts, Dr. N. was using his. Why cannot vulcanizers be made of iron sufficiently strong? We can well afford to lose a little time in "heating up," if we can thereby be better assured of keeping our scalp.

In using Walker's excelsior base, or in the cheoplastic process, I find that, for the investment, a mixture of one part wood ashes, one part marble-dust, and two parts plaster, well mixed, answers the purpose admirably, and does not crack in heating up.

HYDRATE OF CHLORAL.

BY JOHN D. WINGATE, D.D.S., BELLEFONTE, PA.

THIS medicine is the subject of so much comment at present that useful suggestions relating to it are likely to be overlooked. The peculiarity of the following case may be a sufficient excuse for this article.

Miss Y., aged about 21, presented herself to have a right superior dens sapientia removed; the irritation caused by it seriously affected her ear. She is afflicted with palpitation of the heart and chorea; and an excessive fear of extraction came near throwing her into convulsions at the sight of the forceps. Ether or chloroform could not be thought of; administered 8 grains of hydrate of chloral, which made a decided impression upon her, but not sufficient to proceed with the extraction; 15 minutes after gave 5 grains more, and in 10 minutes, on request she opened her mouth, and the tooth was removed. After bleeding awhile she was placed on a sofa, and slept 2½ hours. On waking she could scarcely realize that the tooth was out; her joy was unbounded; but she said, "I wanted the one opposite it out too." She could not force herself to open the mouth long enough to get the forceps into it. Her pupils were considerably dilated,—doubtless owing to the action of the chloral; she could not see to read. With all the energy she was pos-

sessed of she could not keep awake; slept another hour. On waking, did not know of her request to extract another tooth; had not thought of having it out; eyes better; took supper and retired soon after, and slept till 8 next morning. Her sleep was sound and refreshing. Previously, on account of the pain in her back, she could not sleep later than 3 A.M. She stated that morphia had but little effect on her.

CASE IN PRACTICE.

BY T. ELIHU MITCHELL, PULASKI, TENN.

At Edgefield, Tennessee, in the month of August, 1869, a maiden lady, about 25 years of age, applied to me for a full upper set of teeth. I made her a plate which, at first, gave entire satisfaction, but in a short time the gum became so sore that she was unable to eat with the artificial denture. Examining the gum, I found the sharp angle of a left molar root projecting. By cutting away the gum, two roots were exposed; and, attempting to seize them successively with a straight pair of root forceps, they pressed back with the slightest force into the antrum. Blood and pus instantly gushed from the left nostril, attended with vertigo and dimness of vision. In about ten minutes the discharge ceased and the patient recovered. Through the opening of the alveolus I probed the antrum in order to dislodge the roots, but met with no success.

After withdrawing the instrument the patient was free of pain, and could readily force air through the opening. I discharged her for the time, promising to call in a few days to extract the roots. Returning two days after, I found, to my astonishment, that she had blown the two roots out of the left nasal fossa. One of the roots, which I now have in my possession, is $\frac{5}{8}$ of an inch in length and $\frac{9}{16}$ of an inch in circumference. I injected tepid water into the antrum, and advised a continuance of this each day as long as the discharge existed. The patient was of good constitution, and with no other treatment than the above, recovered in a short time. I learned from the patient that the crown of the root had been broken off ten years since, by a practicing physician. She had suffered much with pain in the left side of her face and head for six years.

MISCELLANY.

ABSTRACTS AND SELECTIONS.

BY J. W. WHITE.

Canada Journal of Dental Science.

Dr. C. S. Chittenden thus expresses his estimate of "Tin Foil":

"In dentistry, as in almost everything else, the rage for something new has carried all before it. Conservatism seems to be entirely lost

sight of. Operations on the teeth which were and are known to be of the highest character, so far as usefulness is concerned, are now, in almost every instance, discarded for something newer and more costly. I would not for a moment wish to urge a word against the most costly operations where they are required; but there is a class of teeth, for a class of patients, which can be preserved as long and as well by the use of tin foil as by the use of gold. For instance, if a patient were presented with a large, a very large cavity, a cavity that it would take from ten to fifteen dollars to fill, on the grinding surface of a molar, and the antagonizing molar absent, the patient a person earning his or her bread by daily labor, I would most certainly advise that the tooth should be filled with tin foil, instead of putting him or her to the expense of gold. I like gold fillings, the very best gold fillings, as well as any dentist can, under what I consider proper circumstances, but when I meet with such teeth as I have indicated, which have been saved perfectly for twenty or thirty years, as I do very frequently, I am more and more firmly fixed in the opinion that a little more conservatism is required in these latter days. It has been said that if fillings in the same mouth are made of different metals we shall excite a galvanic action which will have a deleterious effect. Such may be the case, but I have never seen it unless the two metals were brought in contact, and I do not believe it is possible that it can occur except in exceedingly rare cases, if ever. I have met hundreds of mouths with teeth filled with both gold and tin, without ever meeting an instance in which a sufficient amount of galvanic action had been excited to be perceptible. The saliva acts less on pure tin than on any of the metals employed for filling teeth except gold, frequently remaining nearly untarnished for years. As a cheap filling it is infinitely preferable to amalgam, in that it leaves no sting behind."

Missouri Dental Journal.

Dr. Chase, writing on "Heavy Foils," gives the following instructions:

"When new fashions are introduced, many persons go to an extreme which is ridiculous; and so in the use of the heavy gold, there is danger of going to an extreme which is neither desirable nor useful, but on the contrary injurious.

"Undoubtedly two pure gold plates of No. 20 of the gauge could be welded together by serrated instruments and sufficient mallet force.

"Now the thickness of our gold foils must be adapted to the strength and condition of the tooth which we are to plug.

"A certain amount of mallet force will cause pericemental inflammation in one tooth, which would be perfectly indifferent to another tooth. The enamel which would remain intact from any number of blows of a definite weight, from the mallet, in impacting a gold plug, would crack in one or more places by *increase* in the *weight* of blows, given to the gold alone. We have all seen cracks occur in the enamel from concussion produced by blows from the mallet.

"The force which is given by a mallet to a plugger, placed on the mass of a gold plug, is diffused throughout the whole substance of the plug, and also every portion of the crown and root, and even to the maxilla itself. Now, this concussion produces cracks in the enamel which are injurious to the integrity and durability of the tooth. Therefore the blow should be brought down to that degree of weight which the dentos is able to bear with impunity.

"The smaller the mass of gold under the plugger the less force is required for welding. Therefore, the smaller the point of the plugger the lighter may be the blow to produce the desired effect.

"To insure the welding of No. 120 gold foil, without *too great concussion*, we must use pluggers with very small points. Those measuring No. 20 of the gauge plate are as *large* as should be used for No. 120 foil. Smaller ones than these must be more generally used, especially in those places where great strength of plug is required, and the greatest perfection of welding desirable.

"For the *margins* of *approximal* cavities, I prefer No. 30 foil, and also for delicate margins on the crowns of bicuspids. The approximal cavities in the incisors, I think, are also easier plugged with Nos. 20 or 30, than with 60 or 120. The undercuts that must be plugged by hand pressure, are also best filled with No. 20.

"Nos. 60 and 120 are best manipulated by being cut into small squares, not so wide as the diameter of the cavity; or by oblong squares, three times as long as wide. They may be consolidated best, by laying them flat and using one or two thicknesses at a time, for impaction. In moderately large cavities, having heavy walls, they may be placed flatways, or edgeways, indifferently. Against the perpendicular walls, it is best to let a small portion of the flat side lie, and with a foot-shaped instrument impact it against the wall at an acute angle.

"Nos. 20 or 30 can be used in most cavities, without reference to the position of the strips. I cut these numbers into strips, from a half inch to an inch in length, and from one-sixteenth to one-eighth of an inch wide. But a more even surface can be kept by *folding* any of the heavy numbers upon themselves flatways.

"When the surface of the cavity is nearly approached, a more satisfactory plug will be made by always laying the strips flat. Minute depressions are thus avoided in the face of the plug when it is polished.

"Have I abandoned No. 2 gold foil? No. There is hardly a day that I do not use it in connection with the heavy foils. I use No. 2 in situations where *strength* of plug is not required, and when density is not desirable. Strength would not be required in the bottom of a *simple* crown cavity, even if very large. Density is not desirable next to a nearly exposed pulp. A plug of a given size will weigh more if made of No. 60 gold, than of No. 2. The greatest possible solidity in a plug is not *always* desirable. The nearer we can approach to the density of the dentos* itself, and at the same time insure strength and the exclusion of fluids, the better."

American Journal of Dental Science.

Professor Austin deplores the abuse of "Vulcanite" as follows:

"This brings us to the true explanation of the mischief wrought by vulcanite. Not because it has failed to sustain the promise of usefulness it first gave. Its merits are such that, for certain important uses, its place cannot be supplied by any other known material. Not because of the annoyances of the Goodyear patent agents,—although these are serious enough and have led to much demoralization,—but because dentists themselves have failed to recognize the true value of the ma-

* Tooth substance.

terial; because they have made an incidental quality its prominent advantage and their real motive for using it—namely, its cheapness.

"They have used it thus in that underbidding of rival practitioners, which is the burning disgrace of dental practice. They have advertised their cheap wares to the world, till the community look upon 'vulcanite' as a material which costs nothing, and think that the work spent on it has not much more value. Whereas, ten years ago, they could scarcely overcome a patient's prejudice in favor of gold; now, they have so thoroughly demoralized the people, that they will not have gold when the necessity of the case requires it.

"Were it merely a question of cheapness it would not be so serious; for it is a maxim of political economy, that he is a public benefactor who reduces the cost of articles of necessity. But it is no benefaction when the value is reduced in like proportion, and it becomes an imposture when the value is still more reduced. Cheap dentistry is like 'dollar stores' and 'gift enterprises'—you may possibly get the value of your money—you most probably will not. Now and then, a dollar may buy ten dollars' worth; but, in the long run, the inevitable laws of barter will prevail, and the dollar will buy only the dollar's worth.

"There is no more certain law than that cheap work leads to bad work. If proof of this were needed in dentistry—look at the shapeless, inartistic, badly fitting lumps of rubber, stuck over with staring bits of porcelain, which issue from a thousand dental offices—*false teeth*, most appropriately so named—*false* to every idea of truth, beauty, and fitness; made by men *false* to all proper sense of professional pride and duty; worn by persons *false* to their own self-respect and dignity, in permitting themselves to be thus disfigured and made ridiculous.

"A dentist who is mean enough to get work by underbidding, will be dishonest enough to make it correspond to the price. And thus it has come to be a common, and, alas! an accepted excuse for not doing what the case requires—'I cannot afford it at the price I get.' Hence cheap dentistry is dishonest dentistry, when the price is such as to prohibit the fullest exercise of skill.

"A dentist who works at prices which demand unceasing toil to earn his daily bread, leaves himself no time for mental culture. His work becomes a drudgery, in no respect more elevating than that of a common day-laborer. Hence cheap dentistry is degrading dentistry.

"We sum up our charge against vulcanite—or more correctly its abuse—in that its cheapness and a certain facility of construction (in its crudest forms) has tended greatly to foster cheap dentistry and so to make dental art slovenly, dishonest, and degrading. While its peculiar properties are calculated in a high degree to develop art and skill, it has been so used as to lessen the demand for both, and to encourage a community to prefer economy to artistic workmanship. For this reason we regret that when, ten years ago, we predicted its universal adoption, based on consideration of its value, our prophetic vision did not foresee its sad misuse. Its abusers *then* were its opponents, maintaining their case by many absurd and false statements; its abusers *now* are its adherents—alas! that they ever ceased their opposition. Let us hope that, when the days of greenback currency are numbered, cheap vulcanite work will also breathe its last, and both mercantile and dental worlds have new life infused into them by a return to the old-fashioned GOLD BASIS."

PROCEEDINGS OF DENTAL SOCIETIES.

ODONTOGRAPHIC SOCIETY OF PENNSYLVANIA.

On the fifth of January, 1870, a meeting was held, the President in the chair, at which many of the students of the Philadelphia Dental College were present as visitors.

The Corresponding Secretary called attention to a superior right second bicuspid tooth, the property of Mr. A. Enos Perry, a member of the class, which his preceptor, Dr. J. L. Baker, had extracted from the mouth of a boy fourteen years of age, for the purpose of correcting an irregularity. The tooth was remarkable from having the root terminating in three well-marked cones, arranged like the roots of a superior molar, but not so widely spread. It was about the normal size, with a well-developed crown. No one present seemed to have ever seen such a case before, and Mr. Tomes in his "Dental Surgery" only mentions having seen such in the *first* bicuspids of a Chinese. The bifurcation of the superior first or anterior bicuspid is so frequent an occurrence as to make it a very fair rule by which to distinguish them from the second, which are generally found with single roots.

The same person also exhibited a pebble which he had extracted from the nares of a child; he said that, after making an attempt with a pair of forceps and finding that they only pushed it farther in, he had hooked an ordinary hair-pin over it, and with the aid of a probe had removed it. The danger of inflammation and swelling in such accidents makes it imperative to act at once, if possible before they have set in and thus complicated the operation by closing the nostril.

Prof. C. Wedl, of Vienna, Austria, was unanimously elected as honorary member, and Dr. Alfred C. Cogswell, of Halifax, Nova Scotia, as corresponding member.

The essayist for the evening, Dr. E. L. Hewitt, then read a paper on "The Irregularities of the Teeth and their Treatment."

Dr. W. H. Trueman was opposed to the use of caps upon the molars to keep the jaws apart, especially small metallic caps, covering one or two teeth. They bring the entire force of biting upon a few teeth, at a point where the pressure is most severe, and are very liable to cause troublesome inflammation, if not permanent injury. There is also danger of the patient swallowing them: the last one he made met this accident. It was of gold, fitting the first molar quite tightly. The patient, a young miss, while sitting reading, was startled by a member of the family abruptly entering the room, and swallowed it. It immediately passed into the stomach without causing any trouble; but she was under medical treatment several months before recovering from the mental shock of the accident and the effect of the powerful purgatives used to urge its passage.

Regular inclined planes answer the purpose much better; the force is distributed over the jaw, and the planes not only facilitate the movement of the teeth, but also prevent the patients exerting the force they otherwise might. He had used a large number of them, and found they answered the purpose nicely, especially in those cases where we are not able to see the patient as often as we would like,—for instance, children attending school.

He thought the great fault and the chief cause of their failure was in *not making them large enough.* He always preferred to carry them back so as to rest upon the molars of each side; this not only distributes the pressure, but makes the plates fit more firmly, and enables us to dispense with ligatures to hold them in position. The patients can readily remove and cleanse them. In case the patient will not bite upon them, or the teeth move too slowly, he assists them with rubber bands. He thought it very difficult to do anything without the co-operation of the wearer. It is hard enough to regulate the teeth without having at the same time to regulate the patient and perhaps the parent.

When the teeth were at all crowded, he did not hesitate to extract; would rather have too much room than too little; did not believe in forcing the teeth in position with the expectation of the jaws expanding to give them room. If the patient is young enough for any appreciable stimulation of the natural growth, there is danger of the maxillæ being forced apart at the symphysis, especially the upper, which in early life is not perfectly united. Accidents of this kind have occurred. If old enough to escape this danger, the formative process is so far completed as to prevent any great expansion. When the front teeth are forcibly crowded together, we invariably find them decay early on the approximal surfaces. Very often, in the effort to save one or two of the bicuspids, the six front teeth are either lost or their beauty marred forever.

We frequently meet with cases of marked irregularity, where, on simply extracting a bicuspid on each side, the teeth will fall into their natural position without further trouble. To know when and where to commence often requires more real skill and experience than in the actual performance of the operation. Nature should be allowed to do all she can before we presume to assist.

He was decidedly opposed to the use of rubber plates for this purpose; they are thick and clumsy; they do not admit of that ready adaptation to the change going on attained with metallic plates. A silver plate with platina-gold springs can be made to do the work of half a dozen plates of vulcanite, with far less trouble to the operator or inconvenience to the patient.

The idea that these operations do not pay is a mistake, at least, so far as his experience had gone, they had paid him as well as any, and far better than some of the operations he was called upon to perform.

Although cases may be "hanging on" for a long time, and often require our attention, if properly managed they need not consume much time. The changes required from time to time are often quite simple, and can be made without interfering with our other operations. When busy he usually waited upon them in the reception-room. A spring can be bent, a band tightened, or a ligature adjusted without disturbing, and only detaining for a few moments, a patient in the chair.

Although the actual amount of *hard cash* may be small, we must remember that it is but a small part of the fee we receive. A case of this kind, successfully treated, is a standing advertisement as long as the patient lives—known and read of all men—and not only *men*, but what is of far more importance to us, *the women* also.

The mouth of a patient is by far the best medium in which to insert a dental advertisement—providing you don't plaster it up with show-bills and posters. A *neat business card*, although packed away in some nook or corner out of sight, will find a tongue to sing forth your praise every time those pearly gates are opened.

A little money thus invested in the way of time and patience cannot fail to yield a handsome return. A dentist of this city has often related a case in point. Some forty years ago, while in charge of the office during his partner's absence, a young man, a perfect stranger, came in to have a tooth extracted. Upon examination, he thought it could be saved. The patient consenting, he filled it with gold and charged *one dollar*, although it was a large cavity and took fully a dollar's worth of gold to fill it. His partner on hearing of it ridiculed him, saying "he would have just jerked it out and made a quarter, and not fool away a couple of hours for less than nothing." That filling is in yet. The young man, then poor, is now rich, and whenever he has a chance delights to exhibit the tooth he went to have extracted forty years ago, which, "thanks to the kindness and skill of his friend, Dr. B., is in his head as sound as a dollar." The doctor estimates that he has received at least *one thousand dollars* clear profit from patients sent to him by that single operation. Could two hours' time and a dollar's worth of gold have been invested to better advantage? But leaving all this out of the question, let us not forget that every case we treat, if we improve the opportunity, increases our knowledge, our skill, our experience—*our stock in trade*, if you please; we do not lose, but receive in our brain that portion of the reward we cannot jingle in our pockets. To young men especially, with the world before them, these cases, if properly treated, cannot fail to yield a handsome return for all the time, patience, and skill spent upon them.

Dr. Eisenbrey is of opinion that nature is the best regulator of irregular teeth, and if not interfered with will accomplish surprising results in the way of providing room for and accommodating the teeth

—as is instanced in the case of those that live rudely, and those that are beyond the reach of a dentist. *Instruction* and not *extraction* is what our patients, in their earlier years, want; and their parents to see that the instructions are carried out as much as possible. A piece of hard wood or bone or vulcanite of the proper shape, which is easily fashioned, to bite upon, is a requisite; these with oft-applied pressure of the tongue and fingers, will work wonders in the way of securing regularity in the teeth of young persons.

Nature seldom furnishes too many teeth nor of too large size. When they are very irregular and crowded, the defect is to be found in the contracted state of the maxilla, to remedy which, and to hasten or assist a further development, reason would protest against extraction. The teeth are there, and should be there until the waste and repair of the system are in equal proportion; then, if nothing else promises success, he would extract and correct. When mechanical appliances, ligatures, bands, etc. are needed to make the teeth regular, the patient should not be under sixteen years of age. Two or three years later is still better, for then we have the reason of our patients under better control, and the teeth then are moved sufficiently easy.

Rubber tubing and ligatures are among the indispensable mechanical appliances, and almost the only things needed for the worst cases.

The length of time regulated teeth should be held in position when corrected varies from one month to five,—much depends on the adjoining teeth; some, after being moved out or in, are kept there by antagonizing and approximating teeth—would be governed by circumstances.

Prof. Stellwagen considers that the treatment of irregularity of the teeth has been sadly neglected, and that it is mainly due to the want of general knowledge sufficient to make the proper attempts successful.

If so many dollars have been made by the performance of a plain *duty* in saving a tooth by filling, how much greater should the effort and the pecuniary return be for the retention of one that is perfect and necessary to prevent contraction of the arch of the alveolar processes, which deformity is becoming an hereditary condition of the mouths of whole families, who suffer from the effects of hasty and misguided operations.

To give an exact description of the time and modes of proceeding would be useless, without minute details of the growth and development of the teeth and maxillary bones are fully understood. There are certain general rules which seem almost to present themselves, and should be followed as closely as possible.

Having in mind that *the object is to bring about a normal condition*, the indications are clear that we should endeavor to retain all the teeth that nature designs to act as permanent organs, and place each in the natural position with relation to all the surrounding parts.

To do this there must be no alteration of the teeth themselves, by filing to gain room or pitting to adjust apparatus. Hard plates of metal must be used with caution, lest they abrade, and all unhealthy conditions must be combated. Cleanliness must be strictly observed, and undue irritation avoided, while inflammation is controlled by local and general means. Where it is necessary to cap teeth, gutta-percha is preferable, as it does not cut or wear the teeth as plates do; it is susceptible of ready and perfect adaptation, and, from the ease with which it may be altered, can be changed to suit the modifications that arise as the teeth move; and it further presents a softer surface for the occluding teeth to strike upon, thus partially avoiding periostitis. He suggested, where metal caps are used, thin platina plate pressed over models of the teeth and stiffened by flowing gold over them; then, with saw or file-cuts, making them so as to spring over the tooth.

To bring the teeth into proper position, steady, constant, and not too severe pressure is needed. This is, perhaps, best attained by ligatures and rubber springs, and the patient is prevented from removing or interfering at pleasure, while, at the same time, the annoyance does not usually equal that occasioned by the use of more bulky materials.

Perhaps the most important matter is to avoid the complication of the difficulty by unwarranted interference, such as the use of too harsh or untimely measures to reduce the deformity; and, above all, *the premature extraction of any teeth, particularly the canines*, is a very tempting but objectionable practice.

The rule that the deciduous teeth should be allowed to remain until the corresponding permanent teeth present, seems so self-evident that it is only mentioned, as in numerous cases met with by him, it has been neglected. Indeed, the shedding of these organs is a matter that is generally best accomplished by nature. Almost always they may be left in their position without harm, unless the permanent teeth present posteriorly to the arch in the upper, or anteriorly in the lower jaw, or where, by being wedged in, they interfere with the natural forces of the replacing teeth.

He thought the remark once made by Prof. Stillé could not be too well known: "Nature is a most excellent handmaid, but a terrible mistress."

He rarely used plates; their inefficiency and the dangers attending their use are evident to the most casual observer, and the gilling twine ligatures, with rubber, and occasionally gold springs, had accomplished all the tasks which he had met with for the last four years, and this more easily, readily, and at less expenditure of labor, money, or time. For the perfection of this method of orthodontia we are greatly indebted to Profs. Flagg and McQuillen. Finally, he could not close without calling attention to a very instructive and novel course adopted

by the latter; a description will be given in the DENTAL COSMOS,* and a series of papers by the former,† all of which would repay those desirous of information for hunting up and reading.

CONNECTICUT STATE DENTAL ASSOCIATION.

THE fifth annual meeting was held at Hartford, May 18th and 19th, 1869.

The officers elected for the year were as follows:

President.—Dr. Samuel Mallet, of New Haven.

Vice-President.—Dr. H. L. Sage, of Bridgeport.

Recording Secretary.—Dr. C. A. Powers, of Hartford.

Corresponding Secretary.—Dr. John Cody, of Hartford.

Treasurer.—Dr. E. E. Crofoot, of Hartford.

Librarian.—Dr. Jas. McManus, of Hartford.

Dr. L. Parmele then read an essay upon the subject of "Professional Fidelity."

"Diseases of the Gums, their Cause and Treatment," was then considered.

Dr. Francis said: I think, in the majority of cases, the disease is owing to want of cleanliness on the part of the patient. I have heard the remark that people brush their teeth too much. There may be such cases, but they are of rare occurrence. The fault is in the opposite direction.

Dr. Sheffield said: There are some conditions of the system (where there is no want of cleanliness) that produce diseases of the gums. I have seen hypertrophy of the gums that were tolerably clean gums. Remove the cause, and no other treatment is needed. In cases where the disease had progressed so far as to produce looseness of the teeth, I would remove with instruments all the deposits of salivary calculus from the teeth and under the gums.

Dr. McManus thought there were but very few persons who kept their teeth *clean.* Patients need continual warning and instruction, or they will neglect their teeth.

Dr. Riggs said: This whole disease is christened "scrofula of the gums." I deny that it is scrofula of the gums; it is simply inflammation. I divide it into three stages. The first indications of it are redness of the gum where it clasps the neck of the tooth. After awhile the inflammation gets farther down, and when it has been of several months' standing, absorption of the gums takes place.

---

* "Hereditary Transmission of Dental Irregularities." Published in the DENTAL COSMOS for January, February, and April, 1870, pages 27, 73, and 193.

† Orthodontia. Ibid., vol. vii. pages 14, 64, and 468.

This disease takes its origin from two or three sources; usually foulness or mercurial salivation is the cause. If it is allowed to proceed, absorption of the alveolar process takes place, and the teeth will become so loose as to fall out. My treatment would be to remove all foreign matter from the teeth, and if the disease has progressed so as to involve the process, I would remove the rough edges of that also. You must remove *all the diseased* portions, and nature will form new bone around the teeth, but never to its original height. She will mend, however, so that the teeth will become firm.

Dr. Parmele inquired if the gums would be restored as before.

Dr. Hill said: I think the question must be answered in the negative. The gums cannot be restored to their original position, but they will become so far restored as to make the teeth firm in their position.

Dr. Atkinson said: I know a case to the opposite. I can show you alveolar process in a bottle, and new process and gums in the mouth, which are healthy. I do not say it can be done in every case.

Dr. Sheffield said: The reproduction of the hard tissues of the process I have demonstrated in my own practice; also the gum tissue.

The sixth annual meeting of the Association will be held in New Haven, at the Yale Medical College, commencing Tuesday, May 17, 1870, at 11 o'clock A.M., to continue two days. Prof. J. H. McQuillen, of the Philadelphia Dental College, will lecture before the Association on "Voice and Speech." The lecture will be illustrated with specimens, models, drawings, etc.

Other Subjects for Discussion.

1. Treatment and Preservation of the Deciduous Teeth.
2. Methods for the Preservation of the Dental Pulp.
3. Contour Fillings.
4. Heavy Foil.
5. The Best Materials as a Base for Artificial Dentures.

Per order, J. H. Smith, *Chairman Ex. Com.*

ILLINOIS STATE DENTAL SOCIETY.

This Society will hold its sixth annual session in Chicago, commencing on the 10th of May. The following subjects have been selected for discussion, and written essays are pledged by those whose names are affixed thereto: 1, "Exposed Pulps"—G. V. Black; 2, "Arsenious Acid, When, How, and Why to use it"—C. Stoddard Smith; 3, "Separating Teeth, When and How"—J. N. Crouse; 4, "Keeping Cavities Dry"—R. C. Mowbray; 5, "Complicated Fillings"—M. S. Dean; 6, "Heavy Foils and Heavy Mallets"—G. H. Cushing; 7, "Sensitive Dentine, Cause and Treatment"—H. J. Smith; 8, "Cause and Pre-

ventive of Nausea in Administering Ether"—O. O. Wilson; 9, "Propriety of Legislation for the Protection of the People against Dental Imposition, and for the Encouragement of Scientific Attainments by the Dental Profession"—G. H. Cushing; 10, "Mechanical Dentistry" —A. W. French; 11, "Tobacco, its Uses and Abuses on the Teeth"—E. H. Kilbourne.

The Committee urge upon all dentists the importance of being present, if possible. They also suggest to members who intend taking part in the discussion, that they should commit, as far as possible, their views to paper, in a brief and condensed form, as much time would then be saved, and thoughts better digested and more clearly expressed. They also suggest to dentists who are willing to take a part in the clinical operations, that they come prepared with their own instruments. Dentists from neighboring States are cordially invited to meet with this Society and take part in its discussions.

THE STATE DENTAL SOCIETY OF PENNSYLVANIA.

The State Dental Society of Pennsylvania will hold its second annual meeting in the City of Pittsburg, on the third Tuesday of June next (21st), to be in session three days.

All necessary arrangements have been made by the Executive Committee for the comfort and accommodation of the members and delegates at the Monongahela House. It is hoped there will be a full attendance, as the members of the profession of Pittsburg extend a cordial greeting to the members and delegates of the State Society, and are anxious and willing to do all in their power for their entertainment and comfort.

Arrangements will also be made with the railroad companies leading to that city to have the fare reduced to excursion rates.

The subjects of the essays for discussion have not yet been communicated to the undersigned, but notice will be given in due time in the Dental Cosmos.

S. Welchens, D.D.S., *Cor. Secretary.*

MERRIMACK VALLEY DENTAL ASSOCIATION.

The semi-annual meeting of this Association will be held in Plummer Institute Hall, Essex Street, Salem, Mass., on Thursday and Friday, May 5th and 6th, commencing at 10 o'clock A.M., on Thursday.

All respectable members of the profession are invited to be present and unite with the Association.

A. M. Dudley, *Rec. Secretary.*

CHICAGO DENTAL SOCIETY.

The annual meeting of the Chicago Dental Society was held Monday evening, April 4, 1870, President J. H. Young in the chair.

The election of officers to serve for the ensuing year resulted as follows:

President.—Dr. George H. Cushing.

First Vice-President.—Dr. A. E. Brown.

Second Vice-President.—Dr. M. W. Sherwood.

Recording Secretary.—Dr. E. D. Swain.

Treasurer.—Dr. W. M. Albaugh.

Librarian.—Dr. Marsh.

Executive Committee.—Drs. E. N. Crouse, M. S. Dean, and C. R. E. Koch.

THE SUSQUEHANNA DENTAL ASSOCIATION.

The Susquehanna Dental Association will hold its annual session at Williamsport, Pa., commencing May 10, 1870, at ten o'clock A.M. Rooms at the Herdic House.

The subject for general debate is, "Capping Exposed Pulps—its Feasibility, and the Best Means of Accomplishing it."

The sessions of the Association are open to the public, and all interested are invited to attend.

J. M. Barrett, *Secretary.*

NORTHERN IOWA DENTAL ASSOCIATION.

The next annual meeting of the Northern Iowa Dental Association will be held at Waterloo, Iowa, commencing June 13th, 1870, and continue through the 14th and part of the 15th. A good attendance is expected, for an unusually large number have expressed their willingness to prepare essays to be read at the meeting.

A. B. Mason, *Cor. Secretary.*

EDITORIAL.

MONUMENT TO THE MEMORY OF HORACE WELLS, THE DISCOVERER OF ANÆSTHESIA.

In a newspaper just received from Hartford, we are pleased to observe that at a meeting of the Hartford Society of Dentists, held Monday evening, April 11th, 1870, a movement was inaugurated by Dr. Jas. McManus, favoring the erection of a monument to the memory of Horace

Wells, whose claims as the discoverer of anæsthesia are as unquestionable as those of Harvey to the "circulation of the blood," or of Jenner to that of "vaccination." It is due alike to him, and to the dental profession, of which he was a member, that a suitable monument should be erected to commemorate the memory of one who was instrumental in conferring upon man the greatest boon ever granted to suffering humanity.

Up to within a few years his rights as a discoverer have been almost entirely ignored by the scientific world, and interested parties have put forth their unjust claims in a plausible manner, gaining for themselves not merely a hearing, but, in addition, a prominence in the world which almost entirely obscured from view the name of the real discoverer; but the practical demonstrations of the anæsthetic properties of nitrous oxide, recently, not merely in the extraction of immense numbers of teeth, but also in the performance of capital operations in surgery, under its influence, without suffering on the part of the patients, have left no doubt in the minds of impartial judges that Horace Wells is entitled to the credit of being the discoverer of anæsthesia.

A monument to the memory of such a man should not be erected merely by the citizens of his own city or State, but the people at large, who are daily benefited by his discovery, should deem it a privilege and a duty to contribute their quota toward that purpose.

Every dental society, and each practitioner in the profession, should feel a special pride in this matter, and aid the movement to the fullest extent in their power.

The resolutions offered were as follows:

"*Resolved,* That the natural gratitude due to the memory of public benefactors imperatively demands that the City of Hartford and the State of Connecticut, with the medical and dental professions, cause a suitable monument to be erected in the public park of this city in memory of Dr. Horace Wells, the discoverer of anæsthesia.

"*Resolved,* That Drs. J. M. Riggs, James McManus, E. E. Crofoot, C. M. Hooker, and Wm. Blatchley be and are hereby appointed a committee, whose duty it shall be to cause suitable petitions to be presented to the City Council of Hartford and the General Assembly of this State in furtherance of this object, and to obtain signatures to the same."

J. H. McQ.

SPECIMENS RECEIVED.

Acknowledgments are due to the following gentlemen for valuable specimens received:

Dr. William M. Hunter, of Cincinnati, a rare pathological specimen—the skull of a hedgehog, genus marmot, in which the left lower incisor having been broken off, the superior incisor of that side failing to meet

with its antagonist—by the law of unlimited growth peculiar to the incisors of the rodents—has formed a segment of a circle, and perforated the right superior maxilla just in front of the first molar.

The superior incisor of the right side also having been fractured, the inferior incisor of that side has grown into quite a long and pointed tusk. Specimens of this kind are anomalous, and, therefore, the more valuable. There is one somewhat similar to it—the skull of a beaver—in the Royal College of Surgeons of England.

Dr. S. G. Perry, of New York, has also forwarded a microscopical section of the lower jaw and teeth of a squirrel. This specimen shows distinctly the structure of the maxilla, the dentine, enamel, and cementum of the teeth. Any one who has prepared hard tissues, and is, therefore, familiar with the difficulties attendant upon such work, can duly appreciate this valuable specimen. The same gentleman has also sent a longitudinal section of a molar, showing the interglobular spaces in a very satisfactory manner.

In making these acknowledgments, it may be added that such specimens, when used to illustrate systematic courses of lectures, year after year, are very useful in promoting the cause of science; whereas, as isolated specimens in the hands of practitioners, residing in different parts of the country, they are mere objects of curiosity, sooner or later to be lost, stolen, or thrown away as rubbish.

J. H. McQ.

A RARE CASE.

Drs. Wasson and Shulze, writing from Ottawa, Kansas, give the following instance of longevity, which is made the more remarkable by the insertion of a set of artificial teeth:

"A short time ago we inserted a full upper and under set of teeth for an Indian woman—Jane King, mother-in-law of the Chief of the Ottawas—*one hundred and two years old* last January. The alveolar process of both jaws had absorbed considerably, the teeth, except the lower incisors, having been lost over twenty years; but with plaster impressions we obtained an excellent adaptation. The old woman is quite smart, speaks fair English, has unimpaired hearing, and good eyesight, using glasses only when examining anything very closely; is observing, and expects to live many years yet, though she says to live so long is 'heap trouble.'"

J. H. McQ.

BIBLIOGRAPHICAL.

THE CELL DOCTRINE: ITS HISTORY AND PRESENT STATE. By JAMES TYSON, M.D., Lecturer on Microscopy in the University of Pennsylvania, and on Physiology in the Pennsylvania College of Dental Surgery; Fellow of the College of Physicians of Philadelphia, etc. With colored plate and other illustrations. Philadelphia: Lindsay & Blakiston, 1870.

The author of this work has rendered a valuable service in presenting in a condensed form a continuous history of the evolution of the cell doctrine up to the present time. The important discovery made by Schleiden and Schwann, of the formation of vegetable and animal structures from cells, the subsequent contributions to the subject by Virchow, Beale, Huxley and others, are presented in a graphic and interesting manner. The author accepts, with slight modifications, Prof. Beale's division of elementary parts into *germinal matter* and *formed material*, in contradistinction to the view of Virchow, *omnis cellula e cellulâ, i.e.* that from a primordal cell all other cells are formed.

Although avowedly prepared for the use of students in medicine and dentistry, it is a work which will be acceptable to the dental profession at large, as it is upon a subject in which they have manifested for years a lively interest. In its pages an opportunity is afforded of comparing the views of different observers, thus saving an immense amount of labor to those who merely desire a résumé of the diverse opinions of eminent authors; a valuable bibliography is presented at the close of the volume, wherein a list of all the treatises on this subject is offered to those who may desire a more extended acquaintance with the theme. The work is gotten up in a very neat form, and we trust it will meet with what it deserves—a large circulation in the dental and medical profession. J. H. McQ.

U. S. GEOLOGICAL SURVEY OF COLORADO AND NEW MEXICO. Conducted under the authority of Hon. J. D. Cox, Secretary of the Interior, by Professor F. V. Hayden, U. S. Geologist. Washington: Government Printing-office, 1869.

This work contains a report of the explorations of Prof. Hayden and party during the last summer in a region rich in mineral resources. The results obtained have been of the most satisfactory character, and are so highly valued by the Secretary of the Interior as to cause him to speak in the most glowing terms of the survey in his report to Congress. These researches are valuable not only to the country at large, but they are equally so to science; and no department of it has been more enriched by this enthusiastic explorer than odontology. The number of skulls of extinct mammals unearthed by him

would form by itself a large and valuable museum; as it is, they have added to the value of several museums of comparative anatomy in the country.

J. H. McQ.

The Extinct Mammalian Fauna of Dakota and Nebraska, together with a Synopsis of the Mammalian Remains of North America. Illustrated with 30 plates. By Joseph Leidy, M.D., LL.D., Professor of Anatomy in the University of Pennsylvania, etc. With an Introduction on the Geology of the Tertiary Formations of Dakota and Nebraska, accompanied with a Map, by F. V. Hayden, M.D., Professor of Mineralogy and Geology in the University of Pennsylvania, etc. Philadelphia, 1869.

It was but natural to expect that a work emanating from such a careful and conscientious observer as Prof. Leidy, the first living authority in paleontology in America and perhaps in the world, would prove to be, as this has on examination, a valuable and important contribution to science. Embracing a description of the geology of the tertiary formations of Dakota and Nebraska, by Prof. Hayden, and the mammalian remains of North America discovered up to the present time, the work is particularly interesting to the dentist on account of the prominent part the teeth occupy in the text, and the numerous and excellent illustrations accompanying it. In the preface it is remarked, that "the present work is intended as a record of facts in paleontology, as the authors have been able to view them, a contribution to the great inventory of nature. * * * We have endeavored to see and represent things correctly, nothing more, though we apprehend we have not been able to avoid the average amount of errors usual under such circumstances." With respect to preadamic man, the following statement is made: "Up to the present time, in no part of the world have remains been discovered which can be positively referred to an extinct species of *homo;* and on this continent, to the present time, no remains of man have been discovered which, with positive assurance, we can say were cotemporaneous with any of the undoubted extinct species of other mammals."

An analysis of the contents of the work will be presented in a subsequent number of the Dental Cosmos. In the mean time, it is proper to say that a work such as this necessarily involved great expense in the illustrations and publication; yields no pecuniary profit to the authors, and could not have been issued but for the munificence of two private gentlemen, Messrs. Joseph Jeanes and William P. Wilstack. The price of the work, $20, is therefore necessarily beyond the limits of persons in restricted circumstances; but every member of the profession who can afford it should procure a copy, and each dental society should place one in its library. It can be had on application to the Academy of Natural Sciences of Philadelphia, or of the publishers, J. B. Lippincott & Co.

J. H. McQ.

CORRESPONDENCE.

TESTIMONIAL TO DR. S. C. BARNUM.

The friends of Dr. S. C. Barnum, who have derived benefit from the use of the Rubber Dam, are desirous of presenting him with an appropriate testimonial. The Committee appointed to carry out this object desire that dentists will cheerfully respond to the circulars issued as soon as possible. Dr. E. G. Roy, No. 215 West 34th Street, New York, is Treasurer of the Committee.

C. E. Francis, *Chairman*.

33 West 47th Street, New York.

AMERICAN DENTAL ASSOCIATION.

Nashville, Tenn., March 21, 1870.

As the tenth annual session of this Association is to be held in this city, commencing Tuesday, August 2d, I send, by request of several members, for the information of those contemplating attending, the following record of the thermometer from August 1st to 14th, 1869.

		6 A.M.	2 P.M.
August	2	69°	84°
"	3	70	82
"	4	68	86
"	5	76	89
"	6	78	90
"	7	62	79
"	8	60	77
August	9	59½°	80°
"	10	60	82
"	11	62	84
"	12	68	86
"	13	76	88
"	14	75	89

W. H. Morgan.

SELECTIONS.

ON THE DETECTION OF RED AND WHITE CORPUSCLES IN BLOOD-STAINS.

BY JOSEPH G. RICHARDSON, M.D.,

MICROSCOPIST TO THE PENNSYLVANIA HOSPITAL, PHILADELPHIA.

Since the elaborate researches of Gulliver and Carl Schmidt, in regard to the exact variation of size among the blood corpuscles in different species of vertebrates, have been laid before the profession, microscopic examination of blood-stains has assumed an importance in medical jurisprudence far greater than any or all the other methods as yet suggested for the discovery of crime in cases where such recognition depends upon the presence of blood. So characteristic, indeed, is the combination of red and white corpuscles in the circulating fluid, that one might almost as well pretend to doubt the infinite probability that a countless procession of creatures, bearing every appearance of being men and women, was actually composed of members of the human family, as to dispute the fact that a drop of liquid exhibiting the normal corpuscles in their usual abundance, when examined with a suitable power of the microscope, did in reality consist of blood.

When, however, as most commonly occurs, the microscopist is called upon to determine the presence or absence of blood in a dried spot upon cloth or other material, and especially if the exigencies of the case demand a decision whether, if blood, it is that of a human being, the task often becomes extremely difficult, and has hitherto been abandoned as insurmountable by some authorities upon the subject; while others, more sanguine of general success, as they seem to be, yet fail to give the minute directions which would alone enable their readers to follow even at a distance in their footsteps.

Being recently called upon to investigate this subject, as connected with a criminal trial in one of the Eastern States, I was led to some extended researches upon the dried blood corpuscle, developing some of their characteristics which may prove useful to other microscopists engaged in similar studies, and contribute to extend the field of the instrument as an aid to medical jurisprudence.

One of the primary steps in entering upon an investigation of blood-stains is the selection of a proper menstruum for moistening the dried clot, and here, at the outset, we meet with a great discrepancy of opinion; by some authorities pure water, which certainly has the advantage of far greater convenience in its employment, is highly recommended, while others who prefer saline solutions, fixed or volatile oils, etc., condemn the use of water as utterly destructive to the red corpuscles.

In the progress of some researches upon the distention of the white blood cells, when acted on by water (*Pennsylvania Hospital Reports*, 1869), I have often incidentally noticed that many of the red corpuscles become, after a time, so transparent and colorless by the solution and abstraction of their "hæmato-crystallin" that they are quite invisible under a power of 400 diameters, and appear to be in reality dissolved as stated by Prof. Wyman, M. Ch. Robin, and other authorities; yet when closely scrutinized under a $\frac{1}{25}$ immersion objective, their faint transparent outlines can still be detected, thus confirming Prof. Beale's assertions (Mic. in Pract. Med., p. 170) that, "with the highest powers, not only do we meet with extremely minute corpuscles, but many of them are so very transparent that they could not be seen at all under a low power. Extremely transparent bodies are demonstrated under high powers, which would certainly be passed over by those in ordinary use."

This observation appeared to have such an important bearing upon the subject of my present paper, that I entered upon its special investigation, which I propose briefly to detail, promising that while the results seem to prove a very marked difference in density, if not in constitution, between the external and internal portions of the blood disks, I do not consider the data here collected sufficient for controverting the opinions of those experienced histologists who deny to the red corpuscle a proper cell wall.

Expt. 1.—Five drops of blood drawn with a cataract needle from the tip of the finger, were stirred with half a fluidounce of river water in a conical wineglass, which was carefully closed against the entrance of extraneous matters, and set aside. Twenty-four hours after, a scanty sediment, whitish in color, was visible in the bottom of the vessel, and a small portion of this deposit examined under the $\frac{1}{25}$, showed that it was chiefly composed of red blood disks, exhibiting no appearance of rupture, globular in form, quite colorless and so transparent that very close attention was necessary for their detection; similar results were

obtained at the end of forty-eight hours; but, at the end of seventy-two hours, many of these globules were obscured by the formation of Vibriones and Bacteria, which were developing with great rapidity.

Expt. 2.—A thin film of human blood was spread out upon a slide, allowed to dry, covered with thin glass, and then adjusted under the $\frac{1}{25}$: after finding a suitable field which contained a white blood corpuscle surrounded by rouleaux of red ones, water was introduced at the edge of the cover by means of a thread from the reservoir. As the wave of fluids deeply tinged with coloring matter it had dissolved, crossed the field of the microscope, the corpuscles were, for a few moments, obscured, but in a short time the white cell reappeared, and soon after the very faint but unmistakable outlines of the red disks again became visible. This experiment was varied by irrigating some fields exhibiting isolated red corpuscles, and others where by crowding together they had formed an apparently homogeneous clot, in every case with the same result where a higher power was employed; with the $\frac{1}{4}$ inch objective, however, I was unable to satisfy myself of the existence of these eviscerated disks. By careful measurement with the cobweb micrometer, the white corpuscles were found to first diminish slightly on contact with water, and afterward to expand to rather more than their original diameter, while the red disks appeared to suffer a permanent decrease from about $\frac{1}{3050}$ to $\frac{1}{3800}$ of an inch across.

Expt. 3.—Some minute fragments of dried blood from a stain made upon a piece of muslin about three months before were placed upon a slide and adjusted on the stage of the microscope; after finding a suitable portion of clot with a thin beveled edge, water was introduced at the margin of the cover and allowed to flow very slowly toward the chosen fragment; when this was reached by the wave of fluid, a remarkable appearance of boiling up from its centre was presented for a few moments, and then as the tinged liquid was replaced by pure water an aggregation of compressed corpuscles, very faint and colorless, but yet of unquestionable distinctness, became apparent; a few straight interlaced filaments of fibrin were visible, and at intervals the granular spherical lymph globules occurred among the other elements; these white cells frequently became detached and floated freely around the edges of the clot; where, as well as while still imbedded, they were so much more readily recognized with a low power, that I suspect they have often been mistaken for the red disks. By introducing at the margin of the cover a minute portion of iodine solution (*Beale, How to Work with the Microscope*, p. 207), the outlines of the decolorized corpuscles are rendered far more obvious, and can often be distinguished even by inexperienced observers.

In a similar manner the blood of an ox, a sheep, pig, chicken, turkey, and canary bird, most of them dried in a thin film upon a slide, and all dried in a mass upon paper or muslin, were carefully examined, and little difficulty found in distinctly perceiving that the colorless stroma, with its "straight or slightly waving filaments, sometimes more fibrous, sometimes more wrinkled and homogeneous" (Virchow, *loc. cit.*), so long mistaken under lower powers for a mass of fibrin, was actually an aggregation of decolorized red corpuscles, with rare filaments of fibrin, and white blood cells imbedded in it. It is true that the older microscopists, who rarely obtained first rate definition with their lenses magnifying much beyond 500 diameters, were probably wise in recommending that none but the most expert should attempt a decision between the blood

of various mammalia, even when fresh, for the difference between an apparent magnitude of $\frac{1}{10}$ and $\frac{1}{12}$ of an inch may well be counted too minute to lightly determine a question often so momentous; but, as during the last three or four years opticians have furnished immersion lenses of $\frac{1}{25}$ and $\frac{1}{50}$ of an inch focal length, which, with the higher eye-piece, give an amplification of about 2500 and 5000 diameters respectively, thus rendering, with the former, the apparent size of a red disk from fresh human blood, five-sevenths of an inch, while that of a corpuscle from ox blood is but half an inch across, and consequently little more than half the area, as seen upon the stage, it seems as if any careful observer might now, with the aid of such objectives, be qualified to pronounce a positive opinion.

It has been plausibly objected, however, as by Prof. Virchow, in the extract above quoted, that since the diagnosis of the different species of mammalian blood depends solely upon the relative size of the red disks, variation in the rapidity of desiccation may sometimes cause dried corpuscles to so deviate from the ordinary degree of contraction during that process as to lead the microscopist, who relies upon the characteristic of magnitude only, into serious or fatal error. In order to test the truth of this hypothesis, drops of blood from the finger, deposited upon pieces of muslin, were dried under various circumstances; fragments of the stain removed by scraping were then moistened with pure water, and from each variety of desiccated spot, ten corpuscles selected without regard to size, as among those which had best retained their normal circular outline, were carefully measured with the micrometer. Upon comparing the averages of these, as appended below, it will be seen that the difference in the mean diameters does not amount to $\frac{1}{140000}$ of an inch; in no instance was a circular red disk observed to exhibit such an approximation in magnitude to those of ox blood, as could, by any possibility, render its different origin a matter of doubt.

TABLE.

Ten blood corpuscles moistened with water from a clot on muslin which had been dried—	DIAMETERS. *Max.*	*Min.*	*Mean.*
In the open air at ordinary temperature	$\frac{1}{3346}$	$\frac{1}{3625}$	$\frac{1}{3480}$
Before a hot fire	$\frac{1}{3346}$	$\frac{1}{3783}$	$\frac{1}{3564}$
In the afternoon sunshine	$\frac{1}{3346}$	$\frac{1}{3783}$	$\frac{1}{3536}$
In a damp, dark closet	$\frac{1}{3346}$	$\frac{1}{3700}$	$\frac{1}{3552}$

These various experiments appearing to indicate the absence of any tendency in the red blood disk to undergo expansion, I was led to make the following calculation, which tends to show that the outer portion of the corpuscles (whether it be merely condensed viscid material, or a true cell wall, composed of membrane, distinct in composition from hæmatocrystallin), is of an inelastic character. Ten red globules of freshly-drawn human blood magnified almost 1800 times, were measured with the micrometer, while standing on their edges, both in length (as so placed) and in thickness, their mean diameter being found equal to $\frac{1}{3346}$ and their mean of greatest thickness $\frac{1}{13383}$ of an inch. From these data, estimating the total surface of the globule as approximatively equivalent to ninety-six one hundred and sixty-firsts of a ring ·00029886 in outside diameter, and ·00007478 of an inch thick, plus double the superficies of a segment with a versed sine of ·00003739 cut from a sphere having ·00017718 radius, I calculated the area of the hypothetical cell-wall to be ·00000017932 of a square inch; by further computation, it

was found that this amount of membrane would cover a globe ·00023891 of an inch in diameter, which number so nearly coincides with that expressing the diameter of the red disk, when rendered spherical by the action of pure water, viz., ·00023332 ($\frac{1}{4286}$) of an inch, that I think we may fairly conclude that, although the shape of the corpuscle is thus altered, its parietes undergo no real dilatation in the process; further, the corrugated appearance assumed by the corpuscle when any portion of its internal constituent is removed by exosmosis affords some evidence that, however much the cavity is decreased, its limiting membrane suffers no actual diminution in superficial area.

Although it must be admitted that the blood corpuscles of a few mammals approach so nearly in size to those of man as to render their distinction doubtful, yet for the practical testing of blood-stains in criminal trials we will rarely find that such a decision is necessary, since, as a rule, justice only requires that a positive diagnosis shall be made between human blood and that of animals which are commonly slaughtered for food, such as the ox, the sheep, the pig, or of birds, as for example, chickens, ducks, etc., in regard to all of which I believe, when the disks have not undergone disintegration, a first-rate $\frac{1}{25}$ inch objective will enable us to determine easily and beyond all question.

I would suggest to any one about undertaking such an investigation, that he first accustom himself to the appearance of decolorized blood corpuscles, and at the same time test the power of his instrument by repeating Experiment 3d, as detailed above, on a fragment of blood clot recently desiccated upon paper or glass. Experience has shown that dried stains upon hard, smooth surfaces, such as buttons, studs, etc., most readily exhibit the corpuscles; next to these in case of detection, are stains upon paper collars or cuffs, and upon highly-glazed linen, than those upon unstarched muslin or linen; and lastly, those upon cloth and other woolen fabrics. In order to be forearmed against the objections of ingenious counsel, he should in murder cases, wherever practicable, be provided with spots made before witnesses, with fresh blood from the corpse upon different unstained portions of the identical articles of the supposed murderer's clothing, and also with specimens of the blood dried in a thin film upon glass slides, for the purpose of disproving any hypothesis of leucocythemia, or other blood diseases, which might alter the normal character or relative proportion of the blood elements.

In examining the moistened clot, great care must be taken to avoid any movement of the cover upon the slide, which, when it occurs, often rolls the interposed disks into an apparently homogeneous mass; and it is advisable to keep up a current of fresh water, at least, until all tinge of color is removed from the clot, otherwise none but the granular lymph corpuscles may be visible. Should any doubt remain as to the identity of these bodies, it can be set at rest by treating them with acetic acid or solution of aniline, as noted in my paper on the Detection of Undiluted from those of Diluted Blood-Stains, in the *Med. and Surg. Reporter*, Jan. 9, 1869. In order to complete a chain of evidence, it is probable that the decolorized corpuscles in a fragment of clot after being rendered more distinct by iodine, as above mentioned, might often be demonstrated, if required in court, to intelligent jurymen, especially where, as surveyors, watchmakers, or engravers, the jurors were not unaccustomed to the use of lenses.—*Abstract of Paper read before the Microscopical Section of the Academy of Nat. Sciences, and printed in the American Jour. of the Med. Sciences.*

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

"*On the Organic Matter of Human Breath in Health and Disease.*" By Dr. Arthur Ransome, M.A. Manchester Literary and Philosophical Society. (*Chemical News.*)—"The vapor of the breath was condensed in a large glass flask surrounded by ice and salt, by which a temperature several degrees below zero was obtained. The fluid collected was then analyzed for free ammonia, urea, and kindred substances, and for organic ammonia—the method employed being that invented by Messrs Wanklyn and Chapman for water analysis.

"The breath of eleven healthy persons and of seventeen affected by different disorders was thus examined, and the results were given in two tables.

"The persons examined were of different sexes and ages, and the time of the day at which the breath was condensed varied.

"In both health and disease the free ammonia varied considerably, and the variation could not be connected with the time of the day, the fasting or full condition. Urea was sought for in fifteen instances,—three healthy persons and twelve cases of disease,—but it was only found in two cases of kidney disease, in one case of diphtheria, and a faint indication of its presence occurred in a female suffering from catarrh.

"The quantity of ammonia arising from the destruction of organic matter also varied, possibly from the oxidation of albuminous particles by the process of respiration; but in healthy persons there was a remarkable uniformity in the total quantity of ammonia obtained by the process. Among adults the maximum quantity per 100 minims of fluid was 0·45 of a milligramme, and the minimum was 0·35.

"A rough calculation was given of the total quantity of organic matter passing from the lungs in twenty-four hours,—in adults about three grains in ten ounces of aqueous vapor, a quantity small in itself, but sufficient to make this fluid highly decomposable, and ready to foster the growth of the germs of disease.

"In disease there was much greater variation in the amount and kind of organic matter given off.

"In three cases of catarrh, one of measles, and one of diphtheria, the total ammonia obtained was much less than in health,—less than 0·2 of a milligramme,—a result probably due to the abundance of mucus in those complaints, by which the fine solid particles of the breath were entangled.

"In two cases of whooping-cough it was also deficient, but as they were both children, the lack of organic matter may have been due to their age.

"In cases of consumption, also, the total ammonia was less than in health; but in one case of this disease, associated with Bright's disease, a large amount of organic matter was given off, a portion of it due to urea.

"In kidney diseases the largest amount of organic matter of all kinds was found in the breath. The ammonia, in one case of Bright's disease,

was 1·8 milligrammes in 100 minims of fluid, and urea was largely present. Perhaps this fact might be taken as an indication of the need of measures directed to increase the activity of other excretory organs.

"In one case of ozæna, or offensive breath, the total quantity of ammonia obtained was greater than in any healthy subject, but the excess was chiefly due to organic matter.

"One convalescent case of fever was examined, and the total ammonia was found to be deficient.

"The air of a crowded railway carriage, after fifteen minutes' occupation, was also tested by this method, and in about two cubic feet 0·3 milligrammes of ammonia and 3 milligrammes of organic matter were found.

"With reference to the presence of organic matter in the atmosphere, it was pointed out that the subject was in no way a novel one, and that it had, during the last thirty years, been very fully investigated by many observers, more especially by Schwann, Dusch, Schroeder, Helmholtz, Van den Broeck, Pasteur, and Pouchet, but it was shown that it is to Dr. Angus Smith that we owe the discovery of the readiness with which living organisms are formed in the condensed breath of crowded meetings, and the determination of the actual quantity of organic matter in the air of different localities.

"Mr. Dancer's calculation of the number of spores contained in the air was noticed, but a source of error was pointed out in the readiness with which organisms are developed in suitable fluids, even in the course of a few hours. Observations upon the organic particles of respired air had, at different times, been made by the author.

"1. In 1857, glass plates covered with glycerin had been exposed in different places and examined microscopically. Among others, in the dome of the Borough Jail, to which all the respired air in the building is conducted; organized particles from the lungs and various fibres were found in this air.

"2. During a crowded meeting at the Free Trade Hall, air from one of the boxes was drawn for two hours through distilled water, and the sediment examined after thirty-six hours. The following objects were noted: fibres, separate cellules, nucleated cells surrounded by granular matter, numerous epithelial scales from the lungs and skin.

"3. The dust from the top of one of the pillars was also examined, and, in addition to other objects, the same epithelial scales were detected.

"4. Several of the specimens of fluid from the lungs were also searched with the microscope. In all of them epithelium in different stages of deterioration was abundantly present, but very few spores were found in any fresh specimen. On the other hand, after the fluid had been kept for a few hours, myriads of vibriones and many spores were found.

"In a case of diphtheria, confervoid filaments were noticed, and in two other cases, one of measles and one of whooping-cough, abundant specimens of a small-celled torula were found, and these were seen to increase in numbers for two days, after which they ceased to develop.

"These differences in the nature of the bodies met with probably show some difference in the nature of the fluid given off; but it was pointed out that they afford no proof as yet of the germ theory of disease. They simply show the readiness with which aqueous vapor of

the breath supports fermentation, and the dangers of bad ventilation, especially in hospitals.

"Dr. E. Lund and Dr. H. Browne stated that they had also made experiments, the results of which were, in general, confirmatory of those obtained by Dr. Ransome."

Shock.—John T. Hodgen, M.D., Professor of Anatomy, St. Louis Medical College, as introductory to some judicious remarks on this subject (*St. Louis Med. and Surg. Journal*), quotes the following from the admirable work of Prof. J. C. Dalton (on Physiology):

"*The irritability of the nerve continues after death.* The knowledge of this fact follows from what has just been said with regard to experiments on frogs' legs, prepared as above. The irritability of the nerve, like that of the muscle, depends directly upon its *anatomical structure and constitution;* and so long as these remain unimpaired, the nerve will retain its vital properties, though respiration and circulation may have ceased. For the same reason, also, as that given above with regard to the muscles, nervous irritability lasts much longer after death in the cold-blooded than in the warm-blooded animals. Various artificial irritants may be employed to call it into activity. Pinching or pricking the exposed nerve with steel instruments, the application of caustic liquids, and the passage of galvanic discharges all have this effect." (p. 375.)

"*Nervous irritability, like that of the muscles, is exhausted by repeated excitement.* If a frog's leg be prepared as above, with the sciatic nerve attached, and allowed to remain at rest in a damp and cool place, where its tissue will not become altered by desiccation, the nerve will remain irritable for many hours; but if it be excited soon after its separation from the body, by repeated galvanic shocks, it soon begins to act with *diminished energy, and becomes gradually less and less irritable,* until it at last *ceases to exhibit any further excitability.* If it be now allowed to remain for a time at rest, its *irritability* will be *partially restored,* and muscular contraction will again ensue on the application of a stimulus to the nerve. Exhausted a second time, and the second time allowed to repose, it will again recover itself, and this may even be repeated several times in succession. At each repetition, however, the recovery of nervous irritability is less complete, until it finally disappears altogether, and can no longer be recalled.

"Various accidental circumstances tend to diminish or destroy nervous irritability. The action of the *woorara* poison, for example, destroys at once the irritability of the nerves, so that in animals killed by this substance no muscular contraction takes place on irritating the nervous trunk. Severe and sudden mechanical injuries often have the same effect, as when death is produced by violent and extensive crushing or laceration of the body or limbs. Such an injury produces a general disturbance, or *shock,* as it is called, which affects the entire nervous system, and destroys or suspends its irritability. The effects of such a nervous shock may frequently be seen in the human subject after railroad accidents, where the patient, though very extensively injured, may remain for some hours *without feeling the pain* of his wounds. It is only after reaction has taken place, and the activity of the nerves has been restored, that the patient *begins to be sensible of pain.* It will often be found, on preparing the frog's leg for experiment as above, that

immediately after the limb has been separated from the body, and the integument removed, the nerve is *destitute of irritability. Its vitality has been suspended by the violence inflicted in the preparatory operation.* In a few moments, however, if kept under favorable conditions, it recovers from the shock, and regains its *natural irritability.*" (p. 376.)

"M. Bernard has demonstrated, by a series of extremely ingenious experiments on the action of poisonous substances,—first, that the irritability of the muscles may be destroyed, while that of the nerves remains unaltered; and, second, that the motor and sensitive nervous filaments may be paralyzed independently of each other." (p. 395.)

—

Bichloride of Methylene as an Anæsthetic.—The Med. Gazette says that "Dr. Charles Bell Taylor, in the course of a paper on cataract extraction (*British Medical Journal*), calls attention to the rapidity with which anæsthesia is induced by the bichloride of methylene. When given with an inhaler, from which air is almost entirely excluded, insensibility is caused in half a minute, and the effect passes off in two or three minutes. It is said to be quite equal in its properties to nitrous oxide for slight operations, such as tooth-extraction, and, indeed, has long been used by a dentist in Brighton."

—

Methylic Ether as an Anæsthetic. (Lancet.)—"At the Medical Society of London, at a recent meeting, Dr. Richardson made a communication on the application of methylic ether as a general anæsthetic. Methylic ether is made by mixing one part of sulphuric acid with two of pure methylic alcohol, and applying heat. The ether passes over as a gas, having an ethereal odor, and a vapor density of 23, taking hydrogen as unity. To fix the gas, Dr. Richardson passes it slowly through pure ethylic ether, of specific gravity ·730, and boiling point of 95° Fahr.: the gas is being absorbed for several hours, and the result is an ethylic ether saturated with methylic. This is the fluid employed for anæsthesia. Two drachms of the fluid are poured upon domette in a simple mouth-piece, which also covers the nostrils, and the vapor from the surface of the domette is directly inhaled. Dr. Richardson reported eleven cases of tooth-extraction in which he had successfully anæsthetized with methylic ether, at the National Dental Hospital; and since Monday, Mr. Gregson has used it at the Dental Hospital of London, also with great success. Two peculiarities, at least, may be mentioned, as pertaining to the action of the new narcotic:—(1) That it produces quick relaxation of the muscles; (2) That while the patients under its influence are unconscious of pain, they are capable of performing what appear to be conscious acts, which acts, on recovery, are entirely forgotten. The anæsthetic sleep is induced usually within a minute and a half, recovery being perfected as quickly; in no period of the anæsthetic sleep is there asphyxia, and the pulse undergoes little alteration. In short, from the experience as yet obtained, there is promise that, for short operations at all events, methylic ether will fill an important place in our list of remedies. The chemical composition of the ether is (CH_3) 2O."

—

Anæsthesia at the Bellevue Hospital, with the Use of a New Inhaling Apparatus. Report of Cases. By D. H. Goodwillie, M.D., D.D.S. Bellevue and Charity Hospital Reports.—"This paper gives a table of

50 cases, showing that with Dr. Goodwillie's apparatus, 'as an average . . . it appears that two ounces and five drachms of ether would produce anæsthesia in five minutes and one second, and keep it up for twenty-seven minutes and four seconds, in a patient aged twenty-eight years and six months.' The apparatus, of which a wood-cut illustration is given, contains an arrangement of valves for inhalation and exhalation, with an index showing the relative quantities of air and vapor inhaled at any particular time. The advantages claimed for this mode of administering ether are, increased safety; lessened coughing, struggling, and sickness; more rapid recovery from anæsthesia, and greater economy in the quantity of the agent employed."—(J. A., Jr., *Amer. Jour. Med. Sci.*)

Neuralgia Faciei relieved by Chloral.—Dr. Ch. Ehrle, of Wurtemberg, formerly *chef de clinique* of Dr. Niemeyer, relates (*Med. Correspondenz-Blatt des Würtembergischen arztlichen Vereins, Le Movement Méd.*, and *Amer. Jour. Med. Sci.*) the following interesting case "of violent neuralgia, which, on account, of its regularity, Dr. E. thought particularly appropriate for studying the action of the medicine. The subject of it, aged 57, had suffered from neuralgia for 20 years, recurring regularly twice a year, generally in August and December, continuing from three to six weeks. The paroxysms occurred at first every two or five minutes; but for some years they came on only every ten or fifteen minutes. The pain was constantly seated in the ramifications of the superior maxillary nerve in the upper lip, the lower eyelid, the alæ of the nose, and the incisor teeth of the right side. For some years after the extraction of a tooth, the pain extended to all the teeth of the upper jaw. Sometimes it radiated to the forehead, temples, and teeth of the lower jaw. The vault of the palate and the point of emergence of the mental nerve have also been so sensible to pressure that pressure brought on a paroxysm. During the paroxysms the patient experienced a sensation of intense burning in the tongue. He asserts that he could lessen, and even remove the pain by rubbing with a piece of linen the lower part of the right side of the face. Latterly the neuralgia recurred, and as the patient derived no benefit from all imaginable narcotics, Dr. E. had recourse to chloral. At half-past seven P.M. of the 15th of August, he administered two scruples of hydrate of chloral, which was followed by sleep in a quarter of an hour. The intelligent patient stated that he first felt the calming effect of the medicine in the diseased part. His sleep was quiet and free from dreams. Respiration and pulse normal. The patient slept for five hours, when he awakened with pain, but soon went to sleep again, and slept for five hours longer. When he awakened, the pain seemed as on the previous days. Besides, the patient complained a little of coryza and irritation in the throat. On the 18th of August, at half-past nine A.M., two scruples of hydrate of chloral were again given in water and syrup of orange-peel. He slept until eleven o'clock, when his wife, who had misunderstood Dr. E.'s directions, awakened him to administer another dose of chloral, which had been ordered to be given at night. The patient again slept until two o'clock, when he was awakened for dinner. He ate with appetite, after which he had a paroxysm of neuralgia, but soon went to sleep again. At seven P.M. Dr. E. visited him; he did not awake. His sleep was calm, respiration and pulse normal. The urine which he passed in the afternoon did not smell of chloroform. A half hour

after Dr. E. left, the patient was wakened for supper, after which he had some pains, but again fell asleep, which continued until after midnight Between one and five o'clock in the morning he was awake and did not experience any suffering. After five o'clock the pains recurred. The patient lauded the medicine, and desired it to be continued, notwithstanding its high price."

Syncope during Operations. Thomas Downie, M.D. (*Med. Times and Gaz.*)—"It must be a relief to the profession at large, and to individuals in particular, to find so able an advocate as Sir James Y. Simpson coming forward to show them that death from syncope may take place in the operating theatre or in the private surgery, before an operation or during an operation, independent of chloroform being administered. Some individuals are very liable to faint, or go into a state of partial syncope. I have seen a girl, in my own surgery, faint both before getting a tooth extracted and after getting it extracted. Sir James' first case is taken from the writings of John Hunter. 'I have seen,' writes Mr. Hunter, 'a man thrown into such convulsions from the operation of the hydrocele being performed upon him that I began to despair of his recovery.' Well, I have also seen something of the kind, and I remember an instance in particular. A plowman came to my surgery one evening to undergo the operation for the radical cure of hydrocele. I had only injected about half the iodine, when I felt him give way; I caught hold of him with my right hand, but was not able to prevent him from coming to the ground with some force. He was pale as death, and had ceased to breathe. I immediately undid his cravat, bared his chest, and dashed cold water thereon; seized the ammonia bottle, which was near at hand, and thrust it to his nose. Still he made no motion. I then pressed his ribs; tried Hall's method; dashed cold water again on his breast, and again pressed his ribs. At last his chest began to heave, and I need not say how thankful I was for this, seeing I was in my solitary surgery without any one to share the responsibility with me. It may, perhaps, be said that it was a mere case of fainting; but it was deeper than this, as proved by the fact that I had to make up a bed for him in the surgery, and that it was upwards of two hours before he was able to leave it, and then he looked so wretchedly ill that I wanted him to remain all night. Small quantities of brandy and water were given him during the time, as well as a cup of good strong tea."

"*Death following the Application of Creasote to a Carious Tooth.*—*L'Imparziale* relates that a man aged 36 has lately died in the San Maria Nuova Hospital at Florence from the results of the application of creasote to a carious tooth. Gingivitis and gangrene of the mouth appeared, and death from septicæmia took place in sixteen days. The relator of the fact mentions that when young, the free application of creasote to a carious tooth which he had, was followed by inflammation of the fauces and fever, by which he was confined to his bed for three days. These local effects ascribed to creasote are remarkable. We are not aware that any similar cases have been described as occurring in this country."—(*Brit. Med. Jour.* and *Med. Gazette.*)

Subglossitis; Case. By Carsten Holthouse. Trans. of the Clinical Society of London.—"The patient was a healthy man, aged 31, whose tongue became stiff and hard while he was eating his dinner, no appar-

ent cause for the affection being discovered. When seen by Mr. Holthouse two days later, 'saliva poured from the half-open mouth of the patient, as if he were salivated with mercury; but there was no fetor of the breath. The tongue formed a hard, solid lump, filling up the posterior part of the mouth from floor to roof, and was perfectly immovable, . . . and the whole of the subglossic region was affected with a sort of solid œdema, which formed another tumor in front and below the tongue, and filled up the entire space of the floor of the mouth to a level with the free edge of the teeth of the lower jaw.' Five incisions and the use of chlorate of potassa gargles produced no diminution of the swelling, but rapid improvement followed the substitution of borax gargles with the application of a flaxseed poultice to the neck, and the internal use of quinia. The whole duration of the disease was one week. The author points out the diagnostic marks between this affection (which he calls *subglossitis*) and ordinary glossitis, inflammation of the salivary glands, and common salivation. The disease might, he thinks, have originated in the introduction of septic material into a wound of the tongue which might have existed previously unperceived, or might have been produced while eating."—(J. A., Jr., *Amer. Jour. Med. Sci.*)

—

Ichthyosis of the Tongue.—"Mr. Paget described (Obstetrical Soc. of London, *Med. Times and Gazette*) the case of a lady who had suffered for a year when she consulted him. The patches occupied the papillæ, and showed no indications of cancer. Four months afterward, however, they became thickened and indurated, and soon presented appearances of well-marked ulcerated epithelial cancer. There was hereditary cancerous tendency in the family."

—

"*Paræsthesia of Taste.*—Dr. Wernich, in the *Arch f. Psychiatrie u. Nervenkrankh.*, states that in two of his patients, and once in his own person, he noticed, following an injection of morphia, the occurrence of a bitter, and on one occasion of a disagreeable, sourish taste, which was at once overcome by taking a drink of water. In the case of 'hallucination' of taste, recorded by Rose, Dr. W. refers the abnormal phenomenon to an irritation seated at the nervous centre of the sense of taste. An interesting observation connected with this subject is that a condition of inanition, long-continued hunger, etc. would seem to favor the normal sensibility of the tongue to flavors."—(D. F. C., *Centralblatt f. d. Med. Wissenschaften* and *Amer. Jour. Med. Sci.*)

—

"*Effects of Sucking Snake Bites.*—The *Madras Athenæum* gives (*Med. Press and Circular*) the following description of symptoms which manifested themselves after having sucked the bite of the cobra: 'I felt quite well till about some two hours after, whilst at the hospital I began to feel a tightness across the gums and roof of the mouth in the space between the canine teeth. This was followed by a sharp stinging pain of a very peculiar burning character. I felt restless and uneasy at first, and then languid and faint, when, for the first time, it struck me that I might have imbibed some of the poison into my system. I became somewhat alarmed and anxious, and laid down on one of the hospital cots in the ward next to the patient's for a few minutes, and on telling Dr. Thomas that I was not feeling well, he kindly suggested that I should have some brandy and water, which I took, and felt the better

for it. My bowels were inclined to act, but I resisted the feeling. At three P.M., the uncomfortable feeling in my mouth extended not only to the roof internally, but externally in front of the incisor teeth along the gums under the upper lip. I had no appetite for dinner in the evening, and on retiring to bed slept soundly during the night, till about four A.M. the next morning when I was awakened by an acute burning pain in the roof of the mouth, which continued some couple of hours, gradually subsiding, and leaving behind a soreness. I found that the part was blistered,—the tongue to the extent of an inch from the tip quite raw, and the gums of the lower jaw also blistered. I now feel these parts so very sore and tender, that I am unable to partake of my usual food.'"

"*Secreting Organ of, and the Secretion of Sulphuric Acid by, Gasteropode Molluscs.* Paolo Panceri.—Very little is as yet known about the chemical nature of the various fluids produced in and secreted by the non-vertebrated animals. The lengthy paper here quoted describes a very curious phenomenon of the mollusc known as *Dolium galea*, which sometimes grows to a very large size. The saliva of this animal is a colorless, somewhat opalescent liquid, of from 1·025 to 1·030 sp. gr. containing, in 100 parts,—free sulphuric acid, 3·42; combined sulphuric acid, 0·2; combined hydrochloric acid, 0·58; potassa, soda, magnesia, oxide of iron, phosphates, and organic matter, 1·8; water, 94·0 This paper contains, moreover, an anatomical and physiological account of the secretory organs of this animal."—(*Les Mondes* and *Chem. News.*)

Syphilis.—Dr. Chas. Drysdale gives, in *The Medical Press and Circular*, the following graphic summary of the terrible effects of this malady: "The experience of the whole medical profession, both in this country and abroad, if we may judge of it through the medium of publications, is entirely to the effect that the diseases parasitic on prostitution are perhaps the most distressing diseases we have to cope with in practice. Syphilis is seen in its effects everywhere in London and Paris, and especially among the populations of our sea-port towns. It is quite true, what Mr. Paget said in his evidence before the committee of the Lords: 'It would be very difficult to overstate the amount of damage these diseases bring to the population, as regards not only individuals, of whom a considerable number in the lower classes are damaged in health for life, but still more as regards the number of children born subject to diseases which render them quite unfit for the work of life.' The affections referred to by Mr. Paget are blindness, supervening at the age of puberty, deafness, and general enfeeblement of constitution. Many persons, too, suspect greatly that scrofula is often the effect of syphilis in the parents. Mr. Paget has seen five medical men die from infection received from operating on such syphilitic patients; and the writer of these lines has, in many cases, seen nurses and midwives infected by nurslings and women in labor. Every year new facts are being added to show how grave a disease syphilis is,—how it causes epilepsy, palsy, disease of the kidneys, liver, and lungs, while it covers the person with scars and painful ulcerations, and often destroys important organs, such as the palate and larynx. It is from such data as these that Dr. Jenner says, with much truth, 'I cannot express too strongly my conviction of its gravity at the present time. I have arrived at the conviction that it is one of the most fatal diseases we have

in this country.' We are, in short, quite ready to indorse Mr. Prescott Hewitt's views: 'I do not know any disease that is more terrible to my mind than this.' The writer of these lines, indeed, in a speech on this subject at the Medical Society, observed that probably syphilis was the gravest disease of the day. In consumption and cancer the patient lived two years or so, and then his sufferings ceased. In syphilis, a life of thirty years even might be embittered by diseased offspring, by blindness, epilepsy, palsy, and a hundred other ills, causing misery to the patient and all related to him."

Pus, Origin of the Globules of.—" M. Vulpian communicated to the Imperial Academy of Science (Feb 15th, 1870) the results of experiments recently performed by himself and Dr. Hayem, with the view of elucidating the question respecting the origin of the globules of pus. These experiments confirm in every respect the theory of suppuration propounded by Cohnheim. The globules of pus are nothing but the white globules of the blood which exude through the vessels in the vicinity of the inflamed part. M. V. quotes numerous observations made by himself and Dr. Hayem which prove this so satisfactorily that it is difficult to doubt its correctness."—(*L'Union Médicale* and *Amer. Jour. Med. Sci.*)

Chloride of Tin in Muco-purulent Affections.—" M. Mallez states (*Ecl. Med. Jour.*) that a solution of protochloride of tin has a direct action upon purulent secretions from mucous surfaces without any substitutive action, like nitrate of silver, for instance. Placed in contact with pus globules under the microscope, these are seen to immediately disappear. He has had excellent success with its local application in purulent otitis, purulent ophthalmia, and analogous diseases."

Lower Jaw removed through the Mouth.—At the London Hospital (March 9) Mr. Maunder removed (*Med. Times and Gazette*) " one-half the extent of the lower jaw through the mouth without cutting the skin at all, and preserving a good share of the original periosteum. A myeloid tumor occupied the interior of the bone in the person of a girl ten years of age. The bone was severed opposite the right canine tooth, and through the middle of the left ascending ramus."

Fracture of Lower Jaw. St. Elizabeth Hospital, Covington, Ky. Surgical Clinic of Dr. Charles Kearns. Reported by J. W. Hadlock, M.D. (*Med. and Surg. Reporter.*)—" Daniel O'C., aged 25 years; in a fight, was kicked on the right side of the face, fracturing lower jaw behind mental foramen in an oblique direction, the obliquity extending from within outward, and from before backward, also fracturing the bone upon left side just in front of the angle with but little displacement. On the right side the posterior fragment was drawn in toward the tongue, the anterior fragment dropping half an inch below. The fracture had been reduced by some physician before the patient was brought to this hospital, and the ordinary roller bandage applied, extending from the chin to the top of the head, and held in position by a turn of the roller circling round.

" When first seen here by me the tongue and floor of the mouth were very much swollen, and the discharge from the lacerated tissues was very offensive. Finding myself unable to maintain the parts in apposition

upon the right side (the left showing no disposition to displacement), I wired the teeth from each fragment together, and placed a cork between the posterior fragment and teeth of upper jaw, and then applied the four-tailed bandage and drew the chin up until the teeth were on a line horizontally, and kept them in this position for ten days, removing then only the wire, which was producing inflammation of the gums; continued the cork and pressure seven days longer. When he complained of pain on the left side near the angle of jaw and seat of fracture on that side, I removed the bandage and found an abscess, which continues to discharge, but at this date (April 20th) much less. There is union upon the right side, but some deformity, the posterior fragment overlapping the anterior or inner side, and necessarily shortening the right side of jaw. The motions of the jaw are good; the teeth are in line, and with the mouth closed the face appears as though a quid of tobacco protruded the cheek of right side."

Interdental Splints for Fractures of Inferior Maxilla. By Geo. L. Fitch, Dentist, and Student of Medicine at Bellevue Hospital Medical College.—"Interdental splints in various forms have been used for many years, but owing to their complexity or to the difficulty that any one but a skilled mechanic would find in manufacturing or applying them, their use has been limited. Undoubtedly the best of these appliances has been the vulcanite splint used of late years, but the objection to this is, that none but a dentist could apply it, and but few dentists would be able or willing to take the responsibility of treatment in these cases.

"Prof. F. H. Hamilton, M.D., many years ago proposed the use of gutta-percha, a wedge-shaped piece of this material being softened in warm water and placed between the molar teeth on each side, and then moulded around the crowns of these teeth with the fingers, while a bandage around the chin and over the head completed the dressing. The jaws being held apart by the gutta-percha, food could be introduced between the front teeth. Other surgeons have followed in his track with the use of gutta-percha, but the jaw, with all the different plans, was held firmly in one position.

"The advantage which vulcanite splints have had, is in allowing the patient the use of the jaw while the broken fragments are still held firmly in apposition; their disadvantage, as stated above, the difficulty of applying them. I have recently succeeded in applying gutta-percha to the same use as vulcanite, and a brief description will, I trust, put interdental splints into the hands of every man in the profession. Take a piece of dental gutta-percha of length sufficient to reach around the dental arch as far back as the second molars on either side, and of width sufficient to reach one or two lines below the crowns of the teeth, resting on the gums when it shall have been moulded to its place. As this variety of gutta-percha comes in thin sheets, two thicknesses may be used; a little heat and pressure with the fingers converts them into one. Now, the broken fragments being held properly in place by an assistant, dip the gutta-percha into water heated to a little below the boiling point, and while it is softened by the heat, mould it gently around the teeth and gums: as it hardens quickly, possibly it may have to be dipped the the second time in the hot water before it can be nicely and smoothly adjusted. Allow it to remain in its place a moment or two, and then withdraw it and dip it in cold water, and if there be any superfluous

portions they may be clipped off with the knife or scissors. Next take two pieces of iron wire, a little less than ordinary telegraph wire in size (and these should be previously prepared), and bend them into the shape of a horseshoe, or more like the letter V, with its angle cut off somewhat. Flatten out one end of this wire until it is about two-thirds as wide as the splint where it goes over the molar teeth; heat this flattened portion a little and lay it on the gutta-percha; the flattened portion should extend as far as the end of the splint and as far forward as the angle of the mouth, through which it should protrude, and then bend backward on a line with the outside of the cheek, and make it (the wire) as long on the outside of the mouth as on the inside. The wire being somewhat heated, will readily press its way a little into the splint, and with a thin piece of gutta-percha placed over it and smoothly plastered down, our design is completed. The wire outside of the mouth may be bent into different shapes so as to be more readily fastened to the piece of leather or pasteboard which goes under the chin; this latter piece in this, as in the vulcanite splint, being made to fit the under surface of the jaw, and securely fastened to the wire on either side. If I have succeeded in making my description plain, I think any surgeon could in this manner easily construct an interdental splint equal in every respect to vulcanite, and at an expense not to exceed twenty-five cents. The gutta-percha exerts no deleterious influence in the mouth any more than vulcanite does, and it may be taken out and washed frequently to insure cleanliness. Dental gutta-percha may be had at any dental depot, and of the majority of dentists throughout the land."—(*Medical Gazette.*)

Antrum of Highmore, Expansion thereof. Case reported to Clinical Society of London. (*Lancet.*) By Mr. C. H. Moore.—"The patient was a gentleman above whose right bicuspid and first molar teeth a rounded bony tumor projected into the mouth. At two parts circular holes in the bone could be felt through the mucous membrane. The mucous membrane covering the posterior aperture gave way, and an exceedingly fetid, pultaceous, brown substance escaped slowly into the mouth. Mr. Moore made a more free opening into an anterior part of the tumor, and, squeezing out much of its offensive contents, examined the cavity with a probe. He found the space to correspond with the normal relations of the antrum, except toward the malar portion, where in a third place the bone was defective, and the probe could be felt against the cheek. No dead bone could be detected, and throughout the progress of the case no trace of the fetid substance was ever recognized by the patient in his nostril. The teeth next to the tumor were sound, but outside the first molar the gum had receded, and a fine probe introduced with light pressure at that spot passed up the socket for an inch and three-quarters above the crown of the tooth, where it struck against the floor of the orbit, there being expansion of the anterior part of the antrum, and circular apertures in its wall, resulting from distention, not from ulceration; the orbit and palate were free from deformity, and the nostril also was natural, having no communication with the fetid stuff in the bony antrum; there was, moreover, no burrowing suppuration, and no necrosis. Mr. Moore concluded that the cause of the expansion lay in the communication of the bony antrum with the mouth, and that the peculiar substance was food driven up by mastication through the socket of the healthy molar tooth. This sub-

stance had slowly stripped off the lining membrane of the antrum, and thrust it inward, thus obliterating the antrum as a mucous cavity. A vulcanite tube being worn in the opening which had been made with the knife, and frequent cleansing of the cavity practiced, the bony expanded shell of the tumor receded, and in a few months the natural form of the features was restored.

"Dr. G. M. Humphry, of Cambridge, in commencing the discussion, took exception to Mr. Moore's views as to the cause of the disease. He had seen cases in which the cavity of the antrum had become enlarged, and in which the bony walls and mucous membrane had yielded, such cases being usually very protracted, but ultimately doing well. In differing from the suggestions offered by Mr. Moore, he would prefer to ascribe the cause, in the case in question, to necrosis, or some dilatation of the antrum caused by disease. According to his own experience, the fluid secreted and collected in the antrum does not escape through the aperture communicating with the nostril.

"Mr. Christopher Heath agreed entirely with the pathological aspect of the case as suggested by the last speaker. He remarked that the formation of cysts in the antrum was by no means rare, from irritation set up by faulty teeth and other causes; that it is difficult to know when the finger is actually in the cavity of the antrum; that food forced up through a hollow tooth was a most unlikely hypothesis; but that, if this diagnosis was established, earlier interference should have been resorted to.

"The Chairman remarked that a paper by Girardin contained most interesting notes of tumors in the antrum; that cysts in its cavity were common; and that, in speaking of the cavity of the antrum, it must be understood to be within the mucous membrane. He remembered a case somewhat similar to that under discussion, in which he had made a large opening under the cheek and mucous membrane, and eventually extracted a mass of lint that had been inadvertently left there by the surgeon who had opened the same cavity some years before.

"Mr. Moore, in replying, confessed that the subject was obscure, but disagreed with the remarks made, because the matter exuded was specially peculiar, both as to odor and consistence, and because, according to his own knowledge and belief, in cases of necrosis the matter burrows into the antrum as well as the mucous membrane of the mouth."

"*Diet in Certain Surgical Cases.*—It is now many years since the extirpation of bone with a view to its reproduction by means of the periosteum was first practiced, and is now a tolerably frequent operation. In the *Abeille Médicale*, M. André Sanson gives his brother surgeons a hint as to the diet most suitable for patients under such circumstances, so as to hasten their complete recovery. In zootechny, it is by particular kinds of food that the maturity of cattle is hastened. The fodder which is richest in calcareous phosphate is the best suited for the purpose, because that is the chief constituent of bone. The seeds of graminaceous, leguminous, and oleaginous plants are given with this view to the young animals, which thus, as it were, become older than their real age. To apply this principle to man is now the question. The food of cattle being of course unsuited for the human race, we must examine what alimentary substances fit for it will best answer the pur-

pose of favoring the reproduction of bone. Now beans, peas, lentils, and such like leguminous seeds contain upwards of 0·85 per cent. of phosphoric acid, and are therefore to be recommended as the best diet in cases of the above description. Bread, which is such an important element of food in France, requires to be specially mentioned. We have often stated in these colums that the whitest flour, although so pleasing to the eye, is far from being the most nutritive. Wheat flour does not contain more than 0·40 per cent. of phosphoric acid, and 0·02 of lime; that of rye on the contrary possesses 0·70 of the former and 0·05 of the latter; but the bran of wheat contains as much as 2·50 of the one and 0·11 of the other; so that flour of the first quality is deprived of the greater part of its phosphate. Hence patients in whom the regeneration is to be promoted, ought to eat brown bread in preference to white. This is a far better plan than endeavoring to introduce phosphates into the economy in their mineral state."—(*Galignani* and *Med. Gazette.*)

"It may not be without interest to note in this connection and in answer to some of the opponents to the use of the wheaten phosphates in alimentation, that Mr. F. Crace Calvert in a paper read before the British Association (*Chemical News*, Am. Rep. Nov. 1869) has stated that 'most of the phosphates contained in wheat are not combined with the organic matter, but are in a free condition.'"—(Ed. *Gazette.*)

—

"*Influence of Water on Physical Development.*—In a recent report Dr. Letheby says that he considers moderately hard water better suited for drinking than that which is very soft, an opinion which is confirmed by that of the French authorities, who took the Paris water from chalk districts instead of from sandy strata. It appears that a larger percentage of French conscripts are rejected from soft-water districts than from neighborhoods supplied with hard water; and Dr. Letheby adds to this the generalization—which may be of great importance, if it is proved to depend on more than coincidence—that English towns supplied with water of more than ten degrees of hardness, have a mortality of four per one thousand less than those whose inhabitants use softer water. Other kindred points of great interest are raised by Dr. Letheby, such as the possibility of a connection between the prevailing diet of a country and the composition of its potable waters."—(*Brit. Med. Jour.* and *Med. Gazette.*)

—

"*Stammering and Stuttering.*—Dr. Abbotts Smith says a large number of cases of stammering and stuttering can be cured; and of the remainder, nearly all may be relieved by the treatment which he indicates. He maintains that no one need be considered as hopeless, except those belonging to the small class dependent on malformation, or deficiency of the organs of speech. He instances, as causes of stammering and stuttering (1) Too great eagerness in speaking; (2) Speaking with the chest only partially filled with air, which gives rise to sucking in the breath while speaking; (3) Malposition of the tongue; and (4) Speaking too low and indistinctly."—(*Medical Press and Circular.*)

—

"*Antiseptic and Disinfectant.*—The compound of phosphate of lime with sulphurous acid has been shown, by Dr. Garland, of England, to possess remarkable antiseptic and disinfecting powers, applicable in many cases which cannot be reached by other preparations. It is a clean white powder, which soils and stains nothing, dusts off garments

or carpets, leaving no mark; it is free from smell or taste, and harmless to animal life. It withstands the action of the atmosphere indefinitely, is rapidly oxidized when incorporated with soil, and has given great satisfaction as a manure."—(*Med. and Surg. Reporter.*)

"*Glycerin of Tannin.*—This combination, which is of service in so many disorders, is officinal in the *British Pharmacopœia* of 1867, and the directions for its preparations are: 'Take of tannic acid one ounce, of glycerin, four fluidounces. Rub them together in a mortar, then transfer the mixture to a porcelain dish, and apply a gentle heat until ample solution is effected.'"—(*Boston Jour. of Chemistry.*)

"*Cement for Aquarium.*—A correspondent asks for a good cement for this purpose. It is said that a mixture of equal parts of dry white and red lead, made into a paste with mastic varnish, answers the purpose very well. It must be used as soon as made."—(*Ibid.*)

Dangerous Combinations.—"The *Pharmaceutical Journal* publishes a remarkable instance of unforeseen danger arising from the facility with which oxide of silver is reduced by contact with vegetable extracts in common use. A medical man prescribed twenty-four pills, each containing two grains of the oxide of silver, a twenty-fourth of a grain of muriate of morphia, and a sufficiency of extract of gentian; the pills being coated with silver in the usual manner. The pills were delivered to the patient in an ordinary pill-box, but the lady, being in her nursery and having no pocket in her dress, placed the box in her bosom, probably next the skin. In three-quarters of an hour a severe explosion occurred; her underclothes were reduced to tinder, and her right breast was seriously burned. The patient fortunately had presence of mind enough to seize the part with both hands, and thus extinguish the flame. We learn from Mr. Hills that a similar occurrence has been known in compounding the extract of colocynth with the oxide of silver, and that with creasote or oil of cloves this salt is reduced to the metallic state, with the production of heat amounting often to an explosion. In fact, many of the essential oils reduce the oxide of silver, and one of the processes for silvering glass is founded on the fact, oil of cloves being usually employed in the operation. We may mention that when glycerin and permanganate of potash come in contact, heat is evolved, sometimes resulting in flame. An instance has occurred in which a wound was covered with the glycerin of starch, and then sprinkled with powdered permanganate of potash, when the heat produced became unbearable."—(*Lancet.*)

"*Explosion of Fulminating Gold.*—We are indebted to Mr. William A. Street for the following details of a curious explosion which lately occurred at a jeweler's establishment in Syracuse. A quantity of gold scrap had been dissolved in nitric acid and precipitated by ammonia. The entire material being then placed over a register to evaporate, was left there, in an earthen jar, until dried. It was then removed, and, when cool, the operator, who had evidently not studied the chemistry of gold, proceeded to scrape out the dry precipitate into a sheet of paper; a serious detonation soon occurred, and pieces of the jar were driven through a thick plate-glass screen, making clear holes, without tracks, so high was their velocity. We are not told what became of the ope-

rator, but fear the worst. It is almost superfluous to add that if, as is probable, an excess of ammonia was added in precipitating the gold, the entire process was exactly that given in most chemical works for producing fulminating gold in its most explosive condition."—(*Jour. Franklin Institute.*)

"*Recovering Gold and Silver.*—The silver and gold waste that result from photographic operations are best collected in a large bottle or jar, together with anything else that might contain either of the two metals. When the bottle is nearly full, pour a little hydrochloric acid and a solution of green sulphate of iron (copperas) into it, and let it stand in a warm place until the supernatant liquid appears perfectly clear. Add then a few drops more of the hydrochloric acid and iron solution, and observe whether a fresh precipitate forms or not. In the latter case draw the clear liquid off by means of a siphon, and reserve the residue. If the bottle has become partially filled, in course of time, with insoluble chloride of silver and metallic gold, place the residue on a filter, wash it with very dilute acid, and, lastly, with water. After drying, it is to be mixed with several times its weight of dry carbonate of soda, the whole conveyed to a crucible, and the latter heated to a bright red heat, and kept there for about ten minutes. After taking the crucible out of the fire and allowing it to grow cold, it is broken, the button of the alloy of gold and silver cleaned, and heated in a suitable vessel with dilute nitric acid, which will dissolve all the silver, as nitrate of silver, and leave the gold in a finely divided state. This is dissolved by nitro-hydrochloric acid. It is hardly necessary to say that, for photographic purposes, both solutions must be evaporated in a water-bath until the excess of acid has been volatilized, when they may be diluted with a sufficient amount of water and used."—(*Druggists' Circular.*)

Jewelry restored to its Original Lustre.—Alexander Allan writes to the *Scientific American*, that recently he has been led to a series of experiments which confirmed former impressions "that a solution of cyanide of potassium in water—pure and simple—was equal if not superior to any compound that could be used, its action on the articles submitted to it being thorough and instantaneous. A piece of jewelry, so tarnished and dirty as to be unsalable, immersed in it for a few seconds, then rinsed in clean water and dried, was as clean and bright as when it came from the manufactory. At first I hesitated about submitting costly pearls and coral to its action, but soon found that the lustre of the pearls instead of being injured was improved by the thorough cleaning of the settings around them; the same being the case with the coral, the liquid cleaning all those parts of the work which neither brush, buff, nor thread could reach. Fine filigree and Tuscan work; French, or fire-gilt work; plated and galvanized goods were equally benefited; the only articles which could not safely be dipped being those which washing would injure, namely, work with imitation pearls and paste gummed in, or with transparent stone mounted in close settings with foil behind. Lockets, and box and glass pins can be done by removing the glasses. * * * The work which then occupied a whole day can now be done by the new process in a couple of hours, the rouge and lathe being unnecessary * * * I send it for the benefit of your readers, naming the smallest quantity of the material that can be used with advantage.

"Dissolve one ounce of cyanide of potassium in three gills of soft water. Turn up the end of a piece of brass or iron wire into a hook. Attach to it the article to be cleaned, and immerse it in the solution, shaking it backward and forward for a second or two, then take it out and rinse well in clean water. Wash it with warm water and soap to remove any film of cyanide that may remain; rinse again, dip into spirits of wine, and dry in boxwood sawdust. The advantage of dipping in spirits of wine is the immediate drying of the work without any sticking of the sawdust to it. When done with the solution, put it in a bottle and cork tightly. It may be used again and again for some months. Do not forget to label the bottle—*Poison.*

"One caution is necessary; do not bend over the solution so as to inhale its odor, nor dip the fingers in it; if one of the articles drops from the hook, better empty the solution into another vessel. The cyanide is a violent poison, and although there is no danger in cautiously using it, carelessly inhaling it is injurious, and its absorption through the pores of the skin even more so."

—

Electro-deposited Iron.—At a recent meeting of the Royal Society (*Chem. News*) "Mr. W. Chandler Roberts, the chemist to the Mint, exhibited remarkable specimens of electro-deposited iron, prepared by M. Jacobi, of St. Petersburg, and himself. The metal is sufficiently hard to scratch glass. The application of hard iron plates for printing purposes was illustrated by some extremely fine proofs. This material possesses great advantages as an art material. Specimens of electro-iron converted into steel were also shown."

—

"*Electromotive Force of Divers Substances, as, for instance, Pure Carbon, Gold, Platinum, etc., in the Presence of Water and other Fluids.* E. Becquerel.—This paper contains the description of a series of very accurate experiments made with chemically pure substances. Among the curious facts elicited is this—that pure gold, obtained from the French Mint, is acted upon by pure water in a manner not hitherto explained, but which gives the author occasion to ask whether, possibly, gold does not contain another substance, which has not been discovered, or whether, perhaps, the slow action of the water is not the cause of the disaggregation of the gold, and thus explains the fact of its being found in rivers in the state of dust."—(*Comptes Rendus* and *Chem. News.*)

—

"*Mechanical Properties of Steel containing Phosphorus.* L. Gruner. —The results arrived at by this author may be summarized as follows: Phosphorus present in steel in a quantity of from 0·002 to 0·003, causes the metal to be rigid; it tends even to increase the elasticity and the resistance to breaking, but does not modify the hardness. Such steel, however, is wanting in real strength and toughness; it is brittle (*aigre*) —that is to say, does not withstand shocks. The general result is, therefore, that even very small quantities of phosphorus present in steel do not only not improve, but certainly deteriorate its good qualities. Prof. Boussingault concurs in this view, and stated that Dr. Salet, the chief assistant to Prof. Wurtz, has arranged an ingeniously constructed apparatus to detect the smallest possible quantity of phosphorus in iron and steel, by means of the spectrum produced by the combustion of the hydrogen obtained by the action of chlorhydric acid on the metal."—(*Ibid.*)

THE

DENTAL COSMOS.

NEW SERIES.

VOL. XII. PHILADELPHIA, JUNE, 1870. No. 6.

ORIGINAL COMMUNICATIONS.

ADHESIVE GOLD FOIL.

BY LOUIS JACK, D.D.S., PHILADELPHIA, PA.

THERE appeared in the February number of the DENTAL COSMOS a very remarkable article. It is entitled "Adhesive Gold Foil: its Discovery, History, and Use," by Amos Westcott, M.D., D.D.S., etc. It will not be a difficult task to show that, in the portion of the article relating to the discovery of adhesive foil, Dr. Westcott has made some serious mistakes in his claim, if he means that it has any connection with the practice of to-day; that he has made important omissions in the history of his subject; and on the use and application of it, he has said so little, that it is difficult to understand how it can be so important a discovery as he maintains it to be.

The character of Dr. Westcott's paper is such that a review of it might be made with considerable profit; but I prefer to confine myself to the endeavor to show that there has been no connection between what he claims to have done about the year 1840 and the important stride which has taken place in the practice of operative dentistry since 1855. It will easily be proven that there is a distinction between the observation of an uncertain and unreliable adhesiveness which gold foil was sometimes found to possess as much as thirty years ago, and that quality of excessive adhesiveness as now regularly furnished for our use, and as now appreciated by very many operators; between the blind observance of a property which, when marked, was then considered by nearly every one a difficulty and a serious impediment, and the intelligent estimation of this valuable property, which soon occasioned it to be turned into an important aid in filling carious teeth, once a clear definition of it had been made, accompanied by methods of using gold foil which were somewhat new.

I shall also make it plain to whom we are to credit the clear recognition of the extent of this property of pure gold, and his estimation of

the importance of it, and to whose efforts the dental profession is indebted for having introduced and made public methods of operating which have, in the hands of so many operators, completely revolutionized the modes of filling teeth which were in general use as late as twenty years ago. It is not out of place that I should attempt to establish the claim of the one I believe to be entitled to whatever credit is connected with the introduction of extra adhesive foil into common use in our specialty. It happened that my associations at the time were such as to cause me to be familiar with the first tangible experiments in this direction, and that I was intimate with all the steps which led to its public announcement. I feel sure it will cause no surprise to the great majority of older practitioners, when I mention that the present methods of using adhesive gold foil will all be carried back for their starting-point to the published statements made by Dr. Robert Arthur about 1855. Before that time the generally practiced methods of introducing gold while filling teeth were such as to render inadmissible the use of foil possessing this property in more than a slight degree. Such a degree of adhesiveness as the bulk of dentists consider a great advantage to-day would then have been a constant source of com plaint, on account of the methods of operating then in vogue. The manner of using gold then, as now, may be divided into two classes, viz., those where the layers of gold in being introduced were allowed or expected to slide upon each other, either in entering the cavity or in the after consolidation, and those where the operator consolidated the particles from the commencement, adding fresh pieces successively to that previously packed, until the carious cavity would be filled. This latter method was practiced by comparatively a very few persons, and only by such could any advantage be found in much adhesiveness. It could easily be shown that this latter mode did not reach a satisfactory realization until the character of adhesiveness was clearly made known, and until it was made a controllable quality by dentists; from this moment the latter method has constantly increased, and will continue to do so just so far as an intelligent knowledge of this quality fixes itself in the mind.

Any one who is not blinded by prejudice or wedded to familiar ways not easily parted from, must admit that from the time of the explanation by Dr. Arthur of the system he worked out for using adhesive gold, published from 1855 to 1857, and his expressed anticipations concerning the valuable results springing from the use of gold possessing this quality in a high degree, that a marked advance has been taking place in the quality of dental operations not previously attainable. It may be difficult for many to realize this, since it is hard for the mind to travel back into its old paths and regard them as any different from the present track. I could make clear, if space would permit,

what changes have occurred in the manner of preparing cavities and filling teeth consequent on this improvement, which changes have facilitated the performance of good fillings, as well as at the same time conducing to the better preservation of the teeth.

Now it so happened, as I have intimated, that I was cognizant of the facts connected with Dr. Arthur's realization of the great importance of the adhesiveness of gold; and these facts, as well as all the steps and methods connected with the subject, were published at that time; of these Dr. Westcott was aware, and yet he failed to take any notice of them in his article. It will be remembered that Dr. A. made haste, as an earnest of his appreciation of the valuable aid he found in his discovery of this property, and of the means to be used to regulate and control this adhesiveness, to publish a full statement of the whole subject. He exhibited to the whole profession how the adhesiveness could be increased and diminished at will; how and when to use it, and when not to accept it.

The circumstances connected with his claim will be found in the *News Letter* of that period; and in his little treatise on the subject, published by Jones & White in 1857. Of these facts Dr. Westcott must have been cognizant; his history of the subject is so far very deficient.

It may not be out of place here to enter into a relation of the mode of Dr. Arthur's independent discovery of this property. In the winter of 1855 I was associated with him in the practice of dentistry in Philadelphia. Dr. A. had been using "sponge gold" almost exclusively for a year previously; and under his direction I had been making experiments as to the relative density of "sponge gold" and gold foil fillings. While packing some foil which had become hard and unmanageable from handling and great age, he recommended me to anneal it, when he at once observed that it adhered in the same way in which the sponge gold did—in fact, that it required the same kind of manipulation. He at once commenced to use it in precisely the same manner as he had been using the sponge gold. Dr. A. quickly recognized the full importance of this, to him, newly-discovered property of gold, and he set to work earnestly, in his usual way, to investigate its character.

Mr. David Morgan, an enterprising and faithful manufacturer of gold foil, became at once interested in Dr. A.'s views; experimented with foil until he was soon able to produce with uniformity a gold of far greater adhesiveness than any which had been previously made. Before this time "sticky" gold was a somewhat accidental thing, the effort of the manufacturers being to overcome as far as they were able every considerable appearance of this quality. Other manufacturers also took the matter up, and now there is hardly any but have a far greater control of their production than they were previously capable of securing.

Quickly following this recognition came the necessity for a modifica-

tion of the form of the cavity, of the mode of preparing the foil previously to introducing it, and also of the instruments to be used for the purpose. The common methods would not at all answer. This was a new step in dentistry, and the history of our specialty will, when examined, show that it has been one of the most marked advances which has yet been made in it. The introduction of sponge gold and the instruments necessary to use it certainly prepared the way for the effective use of adhesive gold; but considerable modification of the latter was necessary for the use of the newly-prepared foil. All the features of the modified manipulations were carefully worked out to a satisfactory conclusion, and the results anticipated were fully realized in practice.

When Dr. A. found he had fallen on a new and valuable track, he lost no time in making known all he had done, in such a way as to be of service to the whole profession; and from the appearance of his two articles referred to, the general use of adhesive foil commenced, and has extended so widely as to be accepted at the present day by almost every good operator in the profession.

From the time referred to, the term "adhesive foil" began to be used, and nowhere will it be found at a date previous to this.

Dr. A. at that time was unaware of the adhesive qualities of gold. He went into an investigation of the matter as an entirely new thing, and from my knowledge of the circumstances I am confident this was the case. Not only was it new to Dr. A., but it was apparently entirely new to the profession; a strong presumptive evidence of this was the interest which the subject excited at the time, and the opposition which was made in many quarters as to the advantage to be derived from adhesiveness. It will be remembered that a considerable number denounced it as a dangerous innovation; others maintaining that it was a distinction without a difference. The first have had their answer in the modification of the methods of operating to secure the most perfect results, and the almost general acceptance of the property; the second may be enlightened by comparing what had been written on the subject before 1855 with what has been written since.

It will be remembered by those who know Dr. Arthur and his published statements, that some twenty years ago he was in the habit of using very heavy numbers of gold, ranging from 30 to 60. The process was one of working up solidly from a starting-point in the cavity, using very sharp points, somewhat as adhesive foil is used to-day; and yet Dr. Westcott, who, I am assured, was present at the meeting of the American Society when this method was first presented, did not take occasion to mention the application of what he now claims to have discovered long before that time. The use of heavy numbers of foil in this way was one of the steps which caused Dr. A. to use "sponge gold,"

and afterward again adhesive foil, around which circle he has completely traveled fully twice to my recollection.

I was a student of the Philadelphia College of Dental Surgery; attended the two first courses of lectures in this institution, and was present at nearly every lecture delivered by Dr. Townsend, to whom Dr. W. refers. He was a man we all know as having been a foremost operator of the time, and who was enthusiastically alert for every improvement, and free in his presentation of every method of any value in that department with which he was so closely identified, and in connection with which he is so widely known. And yet I never heard him give any intimation that he knew anything of "adhesive gold" until it was brought to his attention by Dr. Arthur. He could not have failed to be informed of the possession of any information of great value which was at all attainable. I remember nothing, either in his lectures or from his private conversation, that bore any more than the most remote relation to adhesive foil. I am sure he had no recognition of this quality beyond a certain small degree of adhesiveness about which there was then no uniformity. In proof of this he found Dr. A.'s methods and extra adhesiveness a difficulty he, in his established methods of operating, could not overcome. He is remembered to have stated that his brother, Charles Townsend, found the new method especially adapted to labial cavities. These facts are evidences of distinctiveness in both materials and methods.

I will call attention for a moment to the statement of Dr. Westcott, that he discovered this property accidentally about the year 1840. He states that in having a quantity of gold foil sent him by mail, the sheets of gold were found united in consequence of the leaves of paper having been removed, and that he at once accepted the hint that he might purposely take an advantage of this disposition of "sticky" gold, which has been to him of more or less service ever since. For his prescience in this I give him all credit, and the excellence of his operations all must admit who have become acquainted with them. Others as well as Dr. Westcott have recognized what he called the "stickiness" of gold, and it is unquestionably true that the productions of the better dentists of that time were due in a great measure to this property of the foil used; for, indeed, without adhesiveness in some degree, it were impossible at any time to make good fillings. But I fail to see in these facts any other than a common observation of a quality which, from the failure to fully appreciate it and work it up systematically, may be called a blind observation. Neither can I see any connection between what he claims he did then and the present methods of using adhesive gold foil. In this connection of the discovery of adhesiveness, a noticeable feature in the matter is, that Dr. W. was one of the leading men in the dental profession at the period to which he refers. It was a time, it must be re-

membered, when dentistry was being delivered from the occult condition in which it had been for so long a time; this was the day when the first attempts to liberalize our specialty were made, and when its leading men were emulating each other in making and publishing improvements. The American Dental Society was then established, and the *American Journal of Dental Science* was started; in the former Dr. W. was a prominent and active member; and of the latter he was for a time an editor, and through a considerable period a frequent contributor to its pages. Now, what is remarkable is this, that, at a time when he was vying with others in making public any new views of his own, this great discovery will nowhere be found mentioned. It appears surprising that Dr. W. could have been satisfied with personal conversation simply concerning such an important discovery, and the more so when the zeal usually shown by him is considered. He could not then have had an inkling of the importance of a property he now claims the discovery of, but for which he had not an intelligent appellation. I have no desire to question anything Dr. Westcott has said as to what he has done, or to detract anything from him which is his due. But when he attempts to write the history of adhesive gold foil as it has already developed itself, he has but little claim to confidence as a relator of past events unless he gives all the prominent facts connected with it

It is also remarkable, that while Dr. W. claims the original discovery of adhesiveness, and declares it so great an improvement as would have warranted him in taking out a patent for it, that he does not avail himself of the advantages of this discovery, but uses gold in such a way as to preclude the employment of foil possessing adhesiveness to any considerable degree. From my experience, if I were so limited in its use, I should endeavor to keep silent on the subject. So that it now appears that, after having discovered this valuable property thirty years ago, and having made use of it "more or less ever since," Dr. W. has, after his long silence, written nothing that is of the slightest value to any one who looks to him alone for instruction in the use of adhesive gold. Is it not difficult, therefore, to perceive what credit Dr. Westcott can expect to obtain for the mere fact of having accidentally discovered that gold had the property of welding in a cold state, although the discovery may have antedated that of any one else, unless he had brought it to the notice of the profession in such manner as to be serviceable to it? The use of adhesive gold has become so familiar to the dental profession at the present day, that the recollection of the disinterested spirit with which it was given to those who are now using it seems well-nigh forgotten. It affords me pleasure, as an act of justice, to recall attention to the real author of the method of using gold foil upon which most of the operators of to-day rely for their best results in their work.

In concluding, it may be stated, that it is a matter of little concern to whom we are indebted for improvements in our specialty, so long as they are well developed and clearly published; by so doing they are rendered beneficial to all. And as the world sees, he who does not act in this manner debars himself from any claim of originality, particularly when he happens to be a member of a liberal profession.

As no idea comes down into the world fully fledged, but may be found in many places at the same time, scattered as germs, so only to that one who vivifies and develops the thought in an active and tangible way can any credit be given. When any new thing is cultivated in this manner, it is out of place and unfair for any of those who have had hold of a scattered germ to claim the maternity of the practically developed idea.

And besides, may I question whether it is not a hard thing that, while making a claim for improvements in any direction, any one should ignore those who have been investigating with some advantage and success in the same direction.

CORRECT ARTICULATION.

BY W. E. DRISCOLL, BEDFORD, IND.

It is natural for a person to throw the lower jaw forward in biting with the front teeth, in order to bring the points of the incisors together. Some persons' inferior maxillæ have a play in this way of about one inch, and they are more apt to protrude the jaw to its utmost when taking a bite as a gauge for articulating artificial teeth, than to close the jaws as when at rest. It is useless to instruct the patient to close the lower jaw as far back as he can, for, in trying it, he will do the very opposite. The absence of the teeth adds greatly to his confusion.

So that the correct articulation necessary to the beauty and use of artificial dentures becomes a matter of chance or good luck without some plan which will result in the patient's raising the lower jaw in a way exactly as desired. To that end the following plan is offered: Before placing the wax in the mouth, instruct the patient to close the mouth as he would if intending to crush something very hard between the molar teeth; and after the wax is inserted, and before he begins to bite, as an additional precaution, place a finger on the masseter muscle, directing him to "bite hard there." If this simple plan has failed once in a hundred cases, it is now forgotten.

The try plate, which always adds very much to the time and trouble in making a set of teeth, and especially so where the patient resides at a distance, is by this plan rendered unnecessary.

EXPERIENCES WITH THE VULCANIZER.

BY CHARLES A. P. GARNSEY, CHICAGO, ILL.

As one of the topics of interest at the present time seems to be the dangers attending the use of the vulcanizer, I propose to jot down a few items of experience in the use of this dangerous machine, having been saved by a kind Providence from being blown into "ethereal space" by the terrific explosion of a Hayes vulcanizing oven. It occurred some three years since, while vulcanizing a case of teeth in an oven with an iron bottom. It was sitting on a dentist's gas stove, on the end of an ordinary laboratory bench; and while I was engaged at the gold drawer in the center, it suddenly exploded, like the report of a cannon, blowing the copper boiler up through the ceiling and in contact with the floor above; throwing the flask containing the teeth against the opposite wall, and blowing the iron bottom, screws, and gas stove into fragments, besides demolishing two windows, a mirror, and sundry other articles. Fortunately I escaped, with the exception of a few scratches. The vulcacanizer was heated up with gas, and the thermometer had not reached 300° when the gas stop-cock was turned on nearly to its full to allow of more heat; for the gas only burned with about one-fourth of its usual force, and I did not bear in mind that about this time the gas would soon come through the pipes with a full head; and in about five minutes from the time I turned on the cock, the explosion occurred. In that length of time the gas must have passed through the pipes with its full force, causing about five times the amount of heat that I intended it should have—and that, too, very suddenly, causing the steam to generate too rapidly, which occasioned, as I then thought, the explosion. I had always put about an inch or two of water in the oven preparatory to vulcanizing; I have since thought the oven might have been defective from constant use, thereby causing weak points, which would not stand the ordinary pressure. I have never thought the Hayes oven as safe as other vulcanizers with copper sides and bottom. The copper portion of the exploded oven was not torn or impaired, but somewhat dented from its contact with the ceiling, and I have it in the office now. In case of the explosion of a vulcanizer, with the boiler part entirely of copper and the outlet at the top, unless the copper was as thin as paper, from oxidation or other causes, I think the force of the explosion would blow off the top first, causing it to ascend, thereby saving one's head, unless it were immediately over it, which is not at all necessary.

Since the "explosion," I am not much in favor of Hayes oven, whatever the cause might have been. At the time of the explosion, I also had in the office a Hayes two-case copper-boiler machine, the cover being secured by three set-screws, which play in a movable

screw collar, and which I have used ever since, and altogether about five years, and between four and five hundred times. Not long since I was called into an adjoining room to attend upon a patient, and forgot my vulcanizer about ten minutes, and before I returned to it I was startled by the escape of steam resembling a locomotive whistle; I knew something had given way, so I jumped and turned off the gas, and kept out of the way until its ire was cooled off; and upon examination I found that the fusible plug had been blown out. Since reading Dr. Trueman's article in the November (1869) number of the DENTAL COSMOS, I have examined the Hayes boiler spoken of, and find no apparent corrosion or oxidation about the copper. And the copper around its centre, about as high as the water-mark (and in fact about all other parts of the sides), is now about the $\frac{1}{20}$ of an inch in thickness, and that after four years' use. It must have been one of the best originally. I always wash out and dry my vulcanizer after using, and leave the top off until I want to use it again. It has not been necessary to change the original thermometer, it still being in good order; have only removed it to clean and add a little mercury. I don't think the strength of the vulcanizer is much if any impaired, and would trust it as soon as a new one. The most apparent cause of explosions is carelessness in watching the vulcanizer. The mercury should not be allowed to rise higher than the point at which you want to vulcanize your piece. *Watching the vulcanizer* will do away with disastrous effects in almost every case. Neither should the vulcanizer be used too long. The price of a new machine is certainly much less than the price of a human life. As a protection or safeguard, a thick piece of boiler iron might be placed around the vulcanizer, and *firmly* fastened to the wall or bench, and reach as high as the top of the machine, leaving only the thermometer visible, making a small hole in the side through which to watch the flame; this would prevent any outward forcing of the pieces, should it explode, and prevent injury to any person standing or sitting near. I vulcanize with the thermometer at 330°; time, from fifty to sixty minutes; I think that height and time produces the best rubber. About twelve years ago I used for four years a three-case iron machine, old style. Had no accident of any kind with it; think the copper boilers far superior. In view of the great danger attending the use of the vulcanizer, and of the late fatal results upon a brother practitioner, should we not rouse ourselves to the perfection or invention of some contrivance for the prevention of explosion, or if that is not possible, then some means to warn us of danger? If we would all *watch* our vulcanizers, there would be comparatively few accidents. But, unfortunately, we are not all capable of thinking of a dozen things at once. The clock alarm bell which Dr. Whitney is engaged in perfecting, will no doubt be a desideratum long wanted, provided it can be used on *any* vulcanizer, and can be relied on.

OBJECT OF ARTIFICIAL DENTURES.

BY C. A. MARVIN, D.D.S., BROOKLYN, N. Y.

Read before the Brooklyn Dental Society.

SUCH is the subject as announced on the card; but it is my desire, in the discussion this evening, to bring out the ideas of gentlemen as to what constitutes a perfect artificial denture; or in other words, the qualities which a denture must possess in order to meet all the demands of such an appliance. To this special end, therefore, shall I confine my remarks.

A perfect artificial denture is one that possesses something more than mechanical beauty. A good mechanic is not necessarily a good dentist, though eminence in the profession of dentistry requires mechanical genius as one of its elements. But a man may be skillful in the use of tools; may construct of prescribed materials a beautiful piece of mechanism after a given model; and that piece of mechanism may be a set of artificial teeth, exquisitely moulded, all its materials put together in a faultless manner, and finished in a style of unequaled beauty, and yet the workman whose production it is may be no dentist—may know nothing of *dental* skill. He is, or may be, only a good mechanic, dexterous in the use of tools, and having an eye for symmetry and artistic beauty. The piece of work he has made may be pleasing for the eye to behold, and yet be destitute of excellence as a denture.

The charms of beauty are fleeting or permanent according to circumstances. In such articles or creations as are expected to possess beauty alone, it becomes more important in our eyes. There we look for it, and having found it, are satisfied. Articles of ornament or decoration are of this class. They must have beauty, or they are worthless. Having beauty, they answer their end, and are valued accordingly.

Artificial dentures are not of this class. They are not designed merely for ornament. They are not to be hung up in a museum, displayed on an étagère in a parlor, or worn externally on the person merely for show. Beauty they should have. It is no detriment, nor should it be despised nor overlooked. Coarse, unfinished sets of teeth, with gaping joints, ill-matched sections, rough plates half polished, are no more creditable or excusable than poorly finished fillings in natural teeth.

Closely allied to this quality of beauty, and yet sufficiently distinct to receive a separate notice, is another, that of *appropriateness*. The lack of this in the insertion of artificial dentures is instantly perceived by friends, and without being able to particularize wherein the defect lies, they complain that the teeth are not natural. The careful and competent dentist, on seeing such cases, is pained intensely, and almost blushes for his profession.

Under this head of appropriateness fall the following particulars,—size, shape, and color of the teeth.

The proper adaptation of teeth as regards these particulars is no slight attainment, nor can it be acquired by other than close observation and lengthened experience. Of course, in this regard, there is the same difference in men that there is in all departments where skill and judgment are involved. Some acquire an art much more readily than others. But making all allowances for natural aptitude, actual experience and observation, preceded by thorough study, are necessary to fit any man to decide even this one question of appropriateness. Each case must be judged of on its own merits, and no one rule can be laid down which will govern at all times. It will not be necessary for me to elaborate this point. Gentlemen who hear me will all appreciate its importance at once—especially any one who has seen persons with small features wearing large teeth, or *vice versa*, or sallow complexions with milk-white dentures, or any other of the many possible and common misjudgments in this direction.

But more than this is necessary. Artificial dentures are intended for use. Hence a third quality required is *utility*, and this in two ways:

1st. Artificial dentures are intended to aid in speech. Every one knows how materially speech is affected by the loss of the natural teeth. Even where but few are missing, the effect is at once noticeable. The vacancy caused by the absence of but one tooth, especially if that tooth be an incisor, often causes a lisping or hissing sound quite as disagreeable to the hearer as it is embarrassing to the speaker. The difficulty of enunciation is greatly increased if several of these important organs are wanting; and if all are gone, how laborious is the exercise of speaking, and how much of that wonderful power possessed by the human voice is lost. How impossible is a clear and distinct utterance of words, the modulation of tones; and how entirely impossible of manifestation that great art, eloquence. A man's mind may be filled with great and glowing thoughts; he may burn with desire to impress others with the lofty ideas that charm and influence his own soul, but so crippled is he by reason of the defect in his speaking machinery, that he must perforce keep silence. Now, if he seek the interposition of a dentist to have the defect remedied, it is apparent that something more than mere beauty is required. Utility in this particular is essential, and without it the services of his dentist afford him no benefit. Artificial dentures must be constructed so as to facilitate ease and clearness of enunciation. Here is a nice point to be attained. The teeth must not be too long, or a whistle will be the result, especially in rapid speaking; nor too short, or great labor will be caused the wearer in consequence of the waste of breath. The circle must not be too small, or the tongue will experience a confinement not at all promotive of ease of action; nor too

large, or the excess of room will militate against precision of utterance. The plate must not be too thick, especially at the posterior edge, or the tongue will be constantly striking it, and the utterance be thick and unpleasant; its adaptation at the zenith of the vertical arch must be perfect, or a slight "cluck" will be distinguished, not at all euphonious. Its finish should be almost to an edge, so that when in place the tongue shall pass from the soft palate to the plate without detecting any shoulder or jog that will embarrass its motions or attract its attention. For, you know, gentlemen, the tongue is a very peculiar member of the human organism; and if it perceives any unusual prominence or irregularity in the teeth or plate, it immediately finds its way there, and *there it stays*, diverting a man's thoughts from any subject he may be considering, and compelling him to think of the annoying defect it has discovered.

The natural concavity of the mouth must be preserved, or there will be a lack of resonance to the tone. The front teeth must not be set too far back from the anterior edge of the gum ridge, nor the base on the lingual side left too thick, or there will be an observed tendency to a clipped pronunciation—as when the tongue strikes suddenly upon the inside of the incisors in such words as *cut, what, put.* I need not add that there must be a perfect fit and a strong suction, or it is of no value whatever. Now, gentlemen, there is something here to be thought of. I might ask the question, Do you believe all these points are taken into careful consideration by every one who inserts an artificial denture? But I know what your answer would be, so I need not press the question.

2d. Besides facilitating speech, artificial dentures are expected to perform the work of mastication. This, too, is somewhat of an important duty.

When we think of the bearing upon health which the thorough mastication of our food has, we acknowledge without hesitation that this duty is a proper one to expect of an artificial denture, and that when it fails of doing this duty readily, uniformly, and perfectly, it is not a perfect denture. According to the laws of our human economy, the mouth has its duty special and important, that of grinding up and macerating the food. The stomach has its duty, a separate and distinct one, of dissolving the mass and separating it into parts preparatory to its distribution throughout the system. Now, if the mouth fails of its duty, or does it imperfectly, and sends the food into the stomach only mashed, and not cut and ground up, double work is imposed upon that organ. It is faithful, and does all it can. But the stomach cannot always do its own work and that of the mouth also. By-and-by it rebels, and then beware! for an acquaintance will be speedily formed with that terrible enemy, dyspepsia, whose train of evils is almost without end or number.

Mastication is expected of an artificial denture. This is no mean point to be secured. It will not do to have a tooth here and a tooth there antagonize, while the others between do not touch. That is not articulation; nor will such occlusion accomplish mastication. There must be such an antagonism that every tooth will assist in the work. The centre of gravity must be understood and considered in the arrangement of the teeth, so that their occlusion with force does not throw them out of place. The grinding surfaces of molars and bicuspids should be so brought into contact that the cusps and depressions fit together, each to each, like the teeth of a steel-trap, that their work may be better done. How many sets of teeth, suppose you, gentlemen, of the cheap kind, articulate properly, and do the work of mastication as nature intended it should be done, and health demands that it should be done?

But we have not finished yet. More than this is necessary for a perfect artificial denture. The lost expression of the features must be restored. Here is need and opportunity for study. It cannot be denied that this effect of artificial dentures is too often overlooked; and if so, it is equally true that the denture is imperfect. Every person has an expression of face peculiarly his own. It is a part of his identity. People are known by it, are recognized by it oftentimes after years of absence. It distinguishes them as truly as their names; and when they have lost it, their friends miss something familiar and dear to them. It becomes the dentist's duty to bring back the pleasing recollections of former years by restoring the lost expression to the mouth. And this depends upon the denture he inserts. If the teeth are too long, a most unnatural and repulsive expression is imparted. If too short, the mouth is but a hole in the face, without character or beauty. If the circle is too large, the lips and cheeks are distended, so that the proper relation between the mouth and the other features is destroyed. The upper lip is stretched and swollen, the lower one protrudes; and in looking at such a case one is constantly wishing the person would take the teeth out. If, on the other hand, the circle is too small, the hollowness of the cheeks and retraction of lips give a wrathful expression to the mouth not agreeable. If the denture be double, that is, both upper and lower, great regard must be had to the relative prominence of the teeth in the two sets, so that the lips meet naturally; that there be no more roll of the lower lip than to bring the line of demarkation between the skin and mucous membrane of the one lip exactly to that of the other when they are compressed. Again, the angle of projection, or the slope of the teeth, as it is called, requires close observation. Some persons require teeth to incline forward; some, to hang perpendicularly; some, to hook under like a hawk's bill. Each of these positions materially affects the expression, and no rule can be laid down

in words which it is safe to follow. Every case must be judged by itself, studied and treated independently of all others. Now, close observation and long experience can alone fit a man to decide wisely what is required in an artificial denture to produce the happy results I have specified. It is folly, gentlemen, to say or believe that any man of fair mechanical ability can make a perfect artificial denture. It takes time to learn how to make a set of teeth, but it takes more time to learn how to decide what kind of a set of teeth to make.

To sum up, then, we have found that a perfect artificial denture must possess beauty, appropriateness, utility,—as an aid to speech and a machine for mastication,—and must be a restorer of lost facial expression. No mean quartette of virtues to be possessed by a single denture. When we think of this subject as we should, and as it deserves, we shall find that it is a grave mistake to consider the mechanical department (so called) of our profession as of minor importance. It opens a wide field for study, and affords the dentist ample scope for not only mechanical but *dental*—that is, *professional*—skill.

SOFT GOLD FOIL.

BY EDWARD J. KING, DECATUR, MICH.

Years ago, in common with the rest of the profession, I used soft foil, and the softer I could get it the better I liked it. Presently there came a whisper, softly at first, but growing louder and louder by degrees, that a great discovery had been made. Hard foil was the thing. I got some of it, of course, and I worked and worked until the perspiration rolled in drops from my forehead in the vain endeavor to make a filling of it. I then procured all the different patterns of tongue-holders and cheek-distenders, duct-compressors and saliva-pumps, rubber-dam and boiled cotton, flax, spunk, bibulous paper, and napkins for stuffing the oral cavity. There was a change. I cried eureka! I could hold myself and my patient while I introduced ten or twelve leaves of Watts' best. In vain was it for my patient to strangle and struggle, or make abortive efforts to order me to stop and extract the tooth. I had him. I kept on in supreme indifference, conscious that I was engaged in a great work, indorsed as it was by the fathers in the profession. I have had seven or eight years of this glorious work, good for the teeth, and necessarily so for the patient. I have just commenced using a little *common sense* with my gold foil.

I see no reason why I should be four hours filling a cavity when I can do it just as well in two; and before anybody tells me I can't do it as well, I want him to give the common-sense method a trial. There are a few cavities, owing to form, position, etc. to which it is not appli-

cable, but to the majority it is. Make one or two retaining points and fill with adhesive gold, putting on a piece or two more after they are full; warm one side of a soft foil pellet, and press it home; then fill the remainder of the cavity with large pellets of soft foil without warming, condensing as much as possible. With wedge-pointed instruments form retaining points in the body of the gold, and fill them with adhesive foil, and so proceed until the wedge refuses to enter again. Doubts may arise in the minds of some as to the relative durability of a filling made in this way, because it cannot be so absolutely solid as when all adhesive foil is used. I will state it as my humble opinion, that we are in the habit of making fillings too solid for any good purpose.

REMOVAL OF THE FIRST MOLARS.

BY ARTHUR C. FORD, D.D.S., ATLANTA, GEORGIA.

In the February number of the Dental Cosmos there is an article from the pen of Dr. Wadsworth, of Washington, D. C., upon the "Preservation of the Teeth," in which the doctor suggests the removal of four of the bicuspids to "obtain room for an expansion of all the other teeth." The suggestion I consider a good one, as far as relates to the "obtaining more room" is concerned, but I would propose the extraction of the first molars in lieu of the bicuspids; and I would here say, I base my opinion upon an experience obtained in an active practice of our profession for about the same length of time as Dr. W., viz., twenty years. My reasons are adduced as follows: These teeth are erupted at or about the early age of six years, just prior to the commencement of second dentition, and it appears to me as though nature has supplied these additional teeth at this particular time, to assist in mastication during the removal of the temporary and full development of the permanent teeth, and that after this process is perfected, their "occupation is gone," and that having been in service from six to eight years longer than their junior comrades, they can and ought to be relieved from further duty; of course there are exceptions to this rule, as well as all others in this world. In at least seventy-five per cent. of the mouths of children that may be examined, the majority of these teeth will be found defective, and I believe generally fearfully so. Now if these teeth are removed, somewhere from the ages of twelve to fourteen years, it will usually be found that not only the bicuspids are benefited, but also the second and third molars, the latter being thereby permitted to develop more perfectly, and will occupy the place of the second molar, the second being promoted to that of the first removed. In illustration of the soundness of my views, I will cite a couple of cases that quite recently came under my observation. A young lady of about twenty-

four years of age, upon examination, I found had lost three of her first molars at an early age, two lower and one upper; and wherever these teeth had been removed, the surrounding teeth were perfect, whereas on the side where this tooth had been retained, *every approximal surface, from the cuspids to the dens sapientiæ, was carious.*

The next case was a sister of the above lady, somewhat younger by a year or so; she had lost *all four* of the first molars early, and had not a single cavity in an *approximal surface.* I have seen several other cases that just as forcibly indicate (to my mind) that these are the teeth that should be removed in preference to any others. The advantages that this mode of practice has over the removal of the bicuspids are: 1st. That these molars being, as it were, in the prolongation of the maxillary arch, and not actually forming one of the arch proper (as are the bicuspids), they will not cause any contraction of said arch. 2d. Being larger teeth, they will give more room. 3d. Being central from first bicuspid to third molar, they will share the space equally with each.

I am so fully impressed with the justness of my views, and the importance of the removal of these teeth, except in peculiar cases, but especially in those who have large dental organs, that it is my intention to put it into practice with all my own children, and remove them all at the proper time, whether carious or not, up to which time I shall keep them in as thorough order as though no such sacrifice was meditated.

I will conclude by stating that there is no practitioner of our profession who is more thoroughly averse to the extraction of teeth, unless it is imperative, than myself, and that I take much greater pleasure in the saving of one tooth (the more difficult, the greater the interest) than in the manufacture of a dozen sets of artificial dentures, but in this specialty I argue that it is better one member should perish than that all should be ruined.

WEDGING FOR APPROXIMAL CAVITIES IN MOLAR AND BICUSPID TEETH.

BY H. N. CASE, LITTLE ROCK, ARK.

Seeing the question of opening approximal cavities in molar and bicuspid teeth so often discussed in the dental journals, I have thought that perhaps my mode of procedure in these cases might not be uninteresting to your readers. I have not used the file for separating teeth for many years; but open for *all* approximal cavities with the wedge.

One would suppose at first thought that molar teeth could not be opened in this way, but I have very rarely met with teeth that cannot be opened just as wide as is necessary, even as far back as second

molars and dentes sapientiæ. I use hickory, and put the wedge in no tighter than I can push it with the hand. I have wedged teeth by the slow process for ten years, and without the slightest ill effects, except in a single case, and even this one I never believed to be directly chargeable to wedging. The case in question was that of a young lady, aged eighteen years, of a scrofulous diathesis, residing in a swampy, malarious district.

She had no trouble with the teeth until more than a year after the operation was performed. Then the teeth ached and caused the face to swell. I give this rather vague and indefinite result, as this was all I could learn from her friends, never having seen the patient since the operation was performed. I am inclined to think that, in cases where slow wedging has produced bad results, it was because rubber was used. The wedge is changed every other day, unless there is too much soreness; then twice a week will be sufficient. I think perhaps the success of slow wedging depends a great deal on avoiding all undue soreness. The best way to cut the wedge off smoothly, so as to be comfortable to the patient, is with the nail blade of a pocket knife, kept for that purpose very sharp and ground thin; rest the thumb upon the end of the tooth, and the file portion of the blade will protect the lip and thumb from being wounded.

Now I am aware that the great objection to this mode will be that it is too much trouble. If there is any one thing which, more than another, results in loss of teeth to the patient, and reputation and practice to the operator, it is this unwillingness to bestow the necessary amount of time and labor on operations.

The great object with many is to cheapen dentistry, and turn off an immense quantity of work; while the true interest of the practitioner is to exalt the standard of excellence. It appears to be the prevailing idea with most dentists that, in order to compete successfully with a neighbor, one must work as cheap or cheaper; but my word for it, no dentist can compete with that operator who performs none but superior operations and then charges a good price for them. These things are—when properly done—done for a lifetime, and although the patient may even grumble at the time, time alone will vindicate your price and make him your friend and advocate. This mode of opening bicuspids and molars gives the operator more perfect access to the cavity, both to prepare and fill it properly. When an approximal cavity is cut into with the file, chisel, or drill, it is almost impossible to round and smooth the edges of the cavity properly, and utterly impossible to condense and polish the filling well down to the neck of the tooth, and then the food crowding down upon the gums through the space that is left between the teeth will prove a serious annoyance for a lifetime; while, if the teeth are opened with the wedge, the

operator has room to prepare the cavity and condense the filling properly, and finish it nicely, and then the teeth will close up again *perfectly* natural.

Many will pass this by, thinking that it is a "hobby" of mine, but I think that no dentist who ever gives it a thorough trial will ever abandon it. It renders comparatively easy a class of operations which are well known to be the most difficult ever met with.

MISCELLANY.

ABSTRACTS AND SELECTIONS.

BY. J. W. WHITE.

British Journal of Dental Science.

At the March meeting of the Odontological Society of Great Britain, Mr. Alfred Coleman read a paper on the "Treatment of Chronic Periodontitis by Replantation," from which we make the following extract:

"The Americans treat chronic periodontitis by a plan suggested by Hunter—either drilling through the alveolar process, or by enlarging an already existing opening, scraping away the diseased periosteum, and provoking the growth of new connective tissue in its place by antiseptic and stimulating applications, such as nitrate of silver or iodine dissolved in creasote. This treatment being applicable only to single-fanged teeth, and, though rational in theory, almost impracticable in execution, it occurred to Mr. Coleman that it might be possible to bring a necrosed putrid tooth to the condition of one that had been removed in a healthy state, and, after being dried, had been transplanted to a new socket, and retained without discomfort. The method proposed was to remove the tooth, clear away caries and contents of pulp cavity and canals, wash out with carbolic acid, fill the canals with cotton dipped in carbolic acid, fill the cavity, scrape off all diseased periosteum and cementum, leaving the healthy portions of mucous membrane attached to neck of tooth; bathe alveolus and tooth in solution of carbolic acid, and return the tooth to its socket.

"'The advent of nitrous oxide gave Mr. Coleman increased facilities for trying such an operation.' A detail of fourteen cases gave a result of nine successful; two did not return, and in three the tooth had to be subsequently removed. In each case the patient had applied for the removal of the tooth on account of pain. The teeth operated on were bicuspids and molars; no artificial support was resorted to, but for incisors and cuspidati a rubber plate to be fitted before replantation was recommended. Mr. Coleman believed that if the conditions of success were more carefully studied, the plan he had described would ultimately become the legitimate mode of treatment in chronic periodontitis. That replanted healthy teeth should reunite is not remarkable, but that a devitalized tooth should do so is, though an unexpected result, an established fact. But what is their condition? Is a new periosteum formed? We have as yet but little information on the subject, but in

one case the tooth was removed and examined, when all would have probably resulted well had the patient persevered. In this case it had been necessary to excise a portion of the fangs to allow of replacement, and this was probably a reason for the tooth not becoming firm. After removal, tissue—like shreds of organized lymph—were found on the fangs; some were vascular; on pulling at them they broke rather than separate from the tooth. After the tooth had been macerated in spirits and water fifty-six hours, the result was the same. Microscopical investigation showed the shreds to be of a dense fibro-cellular tissue running into and lost in the dentine, appearing to belong more to the tooth than to the surrounding structures, though it would have been more easy to suppose that it had originated from the periosteum of the socket, and had become firmly attached to the tooth. The specimen, though it may raise conjectures, cannot be said to throw much light on the subject. From various experiments which Mr Coleman related, it seemed probable that a tooth treated successfully on the plan proposed might ultimately lose its fangs by absorption. Time alone could prove the question."

B. J. Byng, D.D.S., writes from Paris as follows on the subject of "Some of the advantages claimed for non-adhesive over adhesive gold foil:"

"First. For the preparation of all ordinary cavities, it is only necessary to remove the carious portion, polish the border, and introduce your cylinders and tape; while for adhesive foil retaining points have to be made in the sound bone, which almost always causes pain and annoyance to the patient.

"Secondly. If a small blemish is discovered in a non-adhesive plug, or should a portion of the edge or border of the cavity get broken off in polishing or filing down, the gold can easily be burnished up against the part without affecting the utility of the operation; whereas, in adhesive fillings this must not be thought of, as the edge of an adhesive plug is as brittle as cast-iron.

"Thirdly. It is not much affected by saliva or breath, and for large cavities in the under teeth you can even stop two or three times during the introduction of the gold and still arrive at a good result, without the assistance of saliva-pumps, duct-compressors, tongue-holders, syphons, rubber-dams, hot-air pipes, clamps, towels, wooden wedges, floss silk, or overdoses of morphine, to temporarily paralyze the action of the glands, all of which suggestions have emanated from the brains of adhesive foil-pluggers.

"Fourthly. Very little difficulty is experienced in forcing non-adhesive foil against the walls of the cavity, owing to the facility with which it responds to wedge-shaped instruments, expanding and maintaining a continued lateral pressure against its prison walls which the small amount of adhesive force or property left in it by the *goldbeater* can never overcome. This can be clearly proven by extracting a tooth perfectly filled with soft gold, and allowing the same to become dry, when it will not only break open, but the parts so broken will be slightly deranged, showing a slight amount of expansion. This cannot be claimed for adhesive gold of any description; neither will it at ordinary welding force touch two opposite walls at the same time, and

can only be made to do so by much hammering and pinching, which reduces the edges so treated to something like the consistency of sawdust, as will be seen by an after-examination of most of these operations, when it will be found that these edges have washed away, and that the rest of the filling will shortly repeat the history of its borders; and will end by falling out entirely with the exception of the contents of the retaining points, which were about the only places where it actually touched anything but itself.

"And lastly, but not least. There is not much money to be made at filling teeth with adhesive foil: in most cases twice as much gold is required, and it generally takes from two to five times as long for the same kind of operation."

DENTAL REGISTER.

Professor Taft gives his experience in the use of "Heavy Foil" as follows:

"We have been using heavy foil constantly for the last month, and somewhat for the last nine months.

"We began with 10; after some experiments with this took up 20, then 30, then 60, and finally 120. Of these we now use daily 30, 60, and 120, and No 4 for light foil.

"With the present experience, we can hardly realize how we ever got along without heavy foil; indeed, we did not get along anything like so satisfactory as now.

"Our first impressions about heavy foils were very unfavorable, but we have long ago learned not to regard first impressions as the ultimatum; our first impressions are almost always based upon partial or fragmentary testimony, and every thinker will understand how easy it is to be mistaken by knowing only part of the truth, and how often our opinions have to be changed and modified by the successive presentation of new facts, truths, and testimony.

"The man who boasts that he never changes his opinions or views, gives evidence that he is not capable of receiving or understanding any additional truth or testimony, or that he is in possession of all there is upon the subject in question, which is a pretty high position for any one to take.

"Now, in regard to heavy foils, our first impressions were that they would be difficult to work, difficult to weld, and not readily adapted to the walls of the cavities to be filled; but the truth developed by experience subverted all these impressions.

"The heavy foil welds better than the light, is not so readily cut up and comminuted, but is tough and adherent, and welds very perfectly. Its adaptation, we think, is as good, if not better, than the thin. The method of manipulation, of course, is different, and we hardly feel like incurring the risk of leading our brethern astray by attempting to describe the precise method of manipulation required. We think the better plan is (for every one who wishes to learn the precise mode of using heavy foils), to witness the operation, and in that way attain the right method at once.

"We have no hesitation in saying that to correctly obtain this one item of practice is amply worth the expense and labor of a journey of a thousand miles.

"The difference in the appearance of our fillings of to-day and those of six months ago, is very marked indeed, and chiefly owing to the use of heavy foils."

Missouri Dental Journal.

Dr. Eames gives the following instructions for "Repairing Rubber Work:"

"To repair a partial or full plate, broken in twain or cracked, if the fracture does not pass beneath a block, we adjust the parts as accurately as possible, and retain them in position by melting a little gum shellac on the lingual surface of the plate. We prefer the shellac to wax or any other substance commonly used for this purpose, because it holds the parts in position more securely than any of these substances. When the pieces are thus adjusted, lay the plate on the table, with the lingual surface downward, and cover the palatine surface with plaster, mixed with water to which salt has been added, to the depth of half an inch. The salt serves two purposes: it causes the plaster to set quick, and in the process of vulcanizing it renders it soft, so that it is easily removed from the case.

"When the plaster is sufficiently hard, trim off any surplus that may have run over upon the teeth, remove the shellac from the lingual surface, and take the case to the lathe, and burr down this surface, to the thickness of a sheet of paper, along the entire line of fracture; lay over this burred surface a sheet of beeswax, such as is furnished for trial plates; trim the edges of the wax nicely, and see to it that the wax adheres to the surface of the plate so as to exclude all plaster in flasking. In flasking the case, let the plaster come up to the cutting edges of the teeth, leaving only the lingual surface of the plate exposed in the first half of the flask. Trim, varnish, and oil as usual before filling the remaining portion of the flask. When the plaster is set, separate the flask *without* the aid of heat; remove the wax from the lingual surface, and replace it with a piece of rubber of the same size and shape; close the flask and vulcanize."

PROCEEDINGS OF DENTAL SOCIETIES.

ODONTOGRAPHIC SOCIETY OF PENNSYLVANIA.

A meeting was held on Wednesday, February 2, 1870, in the Philadelphia Dental College building. The President in the chair.

Dr. M. Lukens Long presented a left inferior twelve-year molar, having three roots.

Dr. Alfred Cogswell, of Halifax, Nova Scotia, forwarded a canine tooth, with what appeared to be a deposit of salivary calculus near the apex of the root.

Dr. C. Butler, of Cleveland, O., presented a cast of a case of muscular contraction of the jaw, from the effects of salivation.

The following gentlemen were unanimously elected as corresponding members:

Dr. J. G. Perry, No. 111 Madison Avenue, New York; Dr. William M. Hunter, Cincinnati, O.; Dr. J. N. Niles, West Halifax, Vt.

Then followed a somewhat lengthy discussion as to the origin and cause of the deposit at the end of the root of the tooth presented by Dr. A. Cogswell.

Dr. Grady, of California, had met such a case in the mouth of a gentleman of sanguine temperament. The removal of the deposit was more difficult and painful than the extraction of the tooth itself would have been.

Prof. McQuillen considered the case as interesting as it was rare, and believed it was a deposit of salivary calculus through a fistulous opening of a long-established abscess.

Dr. Eisenbrey thought the deposit on this specimen, judging from its character, was from the saliva, and not from the mucous glands. The deposit thrown down from the mucous secretions of the mouth partake largely of organic material, and are very injurious both to the gums and teeth when decomposing, while that from the salivary secretions furnishes an excess of inorganic material; and such appears to be the composition of the tartar on the present specimen. The character of tartar, though very irritating to the soft tissues, exerts a preservative effect on the teeth themselves, though eventually it proves their destroyer by taking away their support. It is not at all uncommon to find teeth under the tartar sound, white, and as well preserved as it is possible for them to be, and if it fills a cavity of decay, it will often preserve the tooth.

How this deposit got to the apex of the root is a question that each one can answer for himself, but none can describe it satisfactorily. Just as it collects around the necks of teeth, so it may reach and collect at the apex. This specimen presents the appearance that an effort has been made to remove the tartar, which was unsuccessful; hence the result was the loss of the tooth, from the inability to remove the cause. Had thoroughness attended the operation, he makes no doubt that the tooth would have remained comfortable and durable for a long time to come.

Prof. Stellwagen explained a manner in which the tooth might have been held in position by a small portion of the periosteum (peridentium, pericementum), a portion of which was still firmly attached to the specimen on one of the approximal surfaces of the root, and which seemed to have been the only point of attachment left at the time the tooth was extracted, since there was no trace of any other, and the tooth, it was said, had been very easily removed, showing that this slight point was that by which the tooth was suspended in a cavity formed by the alveolus, lined perhaps with periosteum. (Such cases are often met with in alveolar abscess, where the pus discharges around

the neck of the tooth.) The free motion of the tooth, oscillating like a pendulum, surrounded where it emerged from the cavity by the mucous membrane, made it a kind of pump piston, sucking and forcing the fluids of the mouth up to the top of the cavity; in this the free margin of mucous membrane acted as a valve to retain it, and the deposition of the foreign matter could readily take place,—the friction of the sides of the tooth against the sides of the cavity keeping it clean there, and the apex, from the want of, or only very slight, motion, permitting it to remain as deposited.

Prof. McQuillen spoke of the new remedy, the hydrate of chloral, some of which he exhibited, and, directing attention at the same time to the possible use that might be made of it in excavating sensitive teeth and in the extraction of others, he then proceeded to make the following experiments:

I. A solution was made, which was allowed to stand some minutes before using, and from the evaporation of the volatile portion it lost its effective properties, so that, when injected under the skin of a frog, it only produced slight insensibility of the eye.

II. Ten grains were dissolved in water, and by the hypodermic syringe were thrown under the skin of the thigh of a frog. In ten minutes there was complete anæsthesia, with a tetanoid and injected condition of the lower extremities, particularly the one to which the application was made. Death, without any appearance of pain, followed in eleven minutes, and upon opening the thorax the heart was found completely paralyzed, not even answering to the prick of a knife.

III. Five grains as above in a frog showed the effect in two minutes. Animal died in about fifteen minutes, with the same symptoms as No. 2. The blood in each of these was very dark.

IV. Ten grains were used as before, under the skin of the thorax of a cat; after being held quiet for thirty minutes, she seemed indisposed to move, but remained wide awake.

A meeting was held on Wednesday, April 6, 1870. The Vice-President, Prof. Kingsbury, in the chair.

Dr. Carl Emmanuel Tellander, of Stockholm, Sweden, presented, through the Corresponding Secretary, some very curious and beautifully constructed extracting forceps, that were made by him in 1840, after patterns used by Dr. Burdell, of New York city. These instruments were about seventeen and a half inches long, the beaks being about two and three-quarter inches to the joint, thus preventing that leverage which such an unusually long handle would give, and at the same time admitting of spring enough to grip very securely without much danger of crushing teeth. It was a part of the design of their manufacturer to allow them to be held with both hands at once, so as

to be serviceable where the operator was weak or timid. There was also a pair of forceps of the ordinary size, with a hook forged upon one of the handles, that projected between them for the forefinger to be placed over.

These contributions were no less valuable as historical relics than for the perfection of their make and finish. After about thirty years of use, they still were almost as free from blemish as on the day they were completed.

The same gentleman also presented a cast in plaster, representing the mouth of a patient for whom he had extracted twenty-eight supernumerary teeth.*

The society expressed itself as highly gratified with these valuable additions to its museum, and a vote of thanks was unanimously tendered to the donor, and his name handed to the Executive Committee to report upon for corresponding membership.

Dr. Trueman exhibited some specimens of nickel-plated dental instruments. He said it was considered to be superior to silver, as it was harder, more durable, and not liable to oxidation or discoloration from sulphur. The difficulty of depositing the metal upon steel had been recently overcome, and its efficacy could be judged of from the manner in which the ordinary brass pins wear. These had for some time been coated with nickel.

It was ordered that the subject for the next discussional meeting, Wednesday evening, June 1, 1870, be: "The Free Use of the File and Chisel as a Means of the Preservation of Teeth."

The Corresponding Secretary was directed to address Dr. Robert Arthur, of Baltimore, Md., stating that the society would be pleased to see him present, and hear him describe the methods approved by him.

In the absence of the regular essayist, Dr. Eisenbrey introduced the subject of absorption and recession of gums from the necks of teeth. He has seen it take place in the mouth of young persons as well as older ones, of both sexes, where the teeth were immaculate and the gums perfectly healthy. He recognizes that hard and frequent brushing, with a stiff brush, the use of charcoal and other insoluble dentifrices, will cause it. But when these things are not used, and the teeth receive judicious treatment, why does it take place? and what is the treatment for arresting it, or to excite a reformation of the lost parts? In elderly persons he attributes it to the usual waste and repair of the body, and the greater density of the teeth, and consequently a less amount of vitality, and which vitality was necessary to maintain the affinity between the gums and the teeth; such affinity

---

* See Transactions of the Odontological Society of Great Britain, where drawings of twenty-four and full description of case are given.

no longer existing, the gum pulls off and supports itself, leaving a portion of the roots exposed to the ravages of decay. He feels a lively interest in the subject from a personal standpoint, having almost every tooth-neck so exposed. By using a tooth powder composed largely of *chalk*, he prevents the softening of the exposed portion of the root. To restore the gum, he has used as stimulants chloride of zinc, nitrate of silver, iodine, etc., but without any perceptible reparative result. The zinc and silver diminished the exquisite sensibility of the cementum, without discoloration, but after a time it again returned.

Dr. Trueman reported twelve cases of capping exposed pulps with oxychloride of zinc. Five were cases of recent exposure; the teeth (two lateral incisors, one bicuspid, and two molars) had given but little pain; all in young and healthy patients. The exposure in each case was complete. They gave no pain during the operation, and, as far as heard from, are comfortable. The bicuspid was filled Jan. 1869; the others are more recent. Four (one bicuspid and three molars) were more favorable cases, the pulp being protected by a covering of dentine, but not sufficient to bear the pressure of filling without the capping. He preferred, in these cases, prepared gutta-percha, or Hill's stopping. In three cases the pain was so severe that the capping was removed and arsenic applied. Although the success attending these experiments was quite flattering, he was not yet prepared to indorse capping exposed pulps as current practice. The cases selected were for patients he frequently met with, and who would report immediately if they gave any trouble. With these experiments he intended to let the subject rest until sufficient time had elapsed to pronounce judgment upon it. He also spoke favorably of Dr. Stellwagen's modification of Dr. McQuillen's lead-water and laudanum mixture for periosteal inflammation, suggested by Dr. S., at a meeting of the Society Jan. 1869. Since then he had used it quite frequently with the happiest result.

Prof. Stellwagen compared the recession of the gums from the teeth to the absorption of the skin from around the root of the finger nails; indeed it was only an exemplification of the laws of supply and demand witnessed anywhere in the economy. The continued wearing of a finger-ring produces a change in the tissues under it from pressure. If the fingers were not properly attended to, and the amount of work required to keep the growth of the skin from off the nail neglected, in a short time the cuticle would almost cover the nails, as on the hands of persons wearing splints, the feet of cripples, etc. The teeth, if not properly used in masticating hard substances, would be surrounded by unhealthy and tumid gums, as we constantly see in the sick; while, on the other hand, the too constant or severe use of the nail- or tooth-brush produced the opposite results, such as complained of. Again, if a splinter is pushed between the nail or tooth and the

flesh, it will cause this same condition, only locally; but if many fine splinters, as are found in the charcoal tooth-powders, bole armenia, or any other insoluble dentifrice, are placed under the free margins of the gums, they will cause irritation enough to result in this trouble.

To speak of this condition as occurring without causes would of course be illogical, and no doubt in Dr. Eisenbrey's mouth this state was originated by the use of charcoal as a dentifrice, which he admitted he had employed some years ago. The morbid condition excited then has been kept up since by the lodgment of foreign matter of various kinds, or some irritant.

The treatment, however, is clearly indicated. After having removed the cause, stimulate and guide the parts to regain their former healthy condition, using for this purpose the proper instruments, a soft brush, the finger, and, if necessary, stimulation by washes, one of the very best being the solution of the chloride of zinc, ten grains to the ounce of water, applied of full strength, or diluted as the case demanded, to the necks of the teeth and gums three or four times per diem on a little cotton wool.

He then stated that he had been experimenting with the oxychloride of zinc, and found that much of it varied greatly in the time required for setting. He had succeeded in getting some that would set in thirty seconds after mixing; hoped to report more fully at a future meeting, but, so far as his experiments had gone, the differences between mixtures containing small quantities of borax and silex with the oxide of zinc and the pure oxide were not evident. With a fine white oxide he had not even found it necessary to calcine to obtain this result. The fluid used was simply the deliquesced chloride of zinc.

The seventh annual meeting was held Wednesday, May 4th, 1870, the President in the chair.

The Recording Secretary reported that nine regular stated and two special meetings had been held during the past year, at which essays were read and discussions entered into. The roll of membership contained 107 names, of which 48 were active, 44 corresponding, and 15 honorary.

The reports of the officers were accepted, and the society proceeded to consider the following amendments to the Constitution, which, according to the custom, had laid over for one year:

"Any one who shall procure a patent for a remedy or instrument used in medicine, surgery, or dentistry, or who shall keep, or profess to keep, as a secret from the profession any compound, prescription, or mode of treatment, in either of the above professions, or who shall enter into a collusive agreement with an apothecary to receive pecuniary compensation for patronage, for sending his prescriptions to said

apothecary, or who shall hereafter give a certificate in favor of a patent remedy or charlatan, shall be disqualified from becoming or remaining a member of this society."

The 4th article of the Constitution was also amended to insert the word "curator" immediately after the word "librarian," in the list of officers.

The By-Laws had an article inserted to read:

"The Curator shall take charge and keep an accurate record of all the specimens presented to the society, with the history of each, so far as he can obtain it, and the names of the donors."

They were adopted separately without a dissenting vote; and a motion to amend the By-Laws was offered, to make them read: "The annual dues shall be $12." This motion was amended to make the dues $5, and an amendment to this amendment was made to make the amount $3; these were then laid over for consideration at the next annual meeting, Wednesday, May 3, 1871.

Prof. Kingsbury introduced a preamble and resolutions approving of the course of the Hartford Dental Association, declaring Dr. Horace Wells to be the discoverer of Anæsthesia, and inaugurating a movement to raise a monument to his memory.

The following officers were unanimously elected for the ensuing year:

President.—Dr. J. H. McQuillen.

1*st Vice-President.*—Dr. C. A. Kingsbury.

2*d Vice-President.*—Dr. J. L. Suesserott.

Recording Secretary.—Dr. Alonzo Boice.

Corresponding Secretary.—Dr. Thos. C. Stellwagen.

Treasurer.—Dr. Wm. H. Trueman.

Librarian.—Dr. C. M. Curtis.

Curator.—Dr. S. S. Nones.

Executive Committee.—Drs. Pike, Eisenbrey, and Long.

Prof. Stellwagen exhibited splints for fracture of maxillæ capable of adaptation to any jaw, and also of being wired together, thus saving the time required to solder. The case will be reported.

Prof. McQuillen exhibited a necrosed portion of the lower jaw, consisting of a large part of the ramus and body of the bone on the right side, which he had recently removed from a child.

AMERICAN DENTAL ASSOCIATION.

THE tenth annual session of the American Dental Association will be held in the city of Nashville, Tenn., commencing on Tuesday, August 2, 1870. We have not yet received the official notification of the meeting, but publish this information for the benefit of our readers. Our next number will probably contain the notice from the proper authority. *

FIRST DISTRICT DENTAL SOCIETY OF NEW YORK.

At the meeting of this society, held in April, 1870, a paper was read by Dr. Atkinson on "Wasted Alveolar Process."

The paper started out with the declaration that to ask questions upon this particular subject requires more of him who is to *answer* than enters into the mind of most persons who ask them. The greatest difficulty in the way of clear elucidation and explanation to dentists as a class, is their utter lack of knowledge in histology.

"Coming into the practice of dentistry from the shop, rather than from the college, is the principal cause of this lack." "And even those who have availed themselves of all the colleges have taught are yet in the alphabet of histologic science." "Inspection of the exterior of systems and organs is not sufficient,—we must become familiar with the character of bodies too small to be seen by the natural sight, before we can comprehend the subject of function." In order to make a proper diagnosis and prognosis of a case, a knowledge of the formation, growth, and nutrition of the parts concerned is necessary. The normal function of the territory concerned is to accept or reject the pabulum or non-pabulum respectively; "the two conditions of interference are deficiency and excess of the work of normal function." The elemental bodies of the alveolar process are a mixed example of mineral and vegetable elements, produced and maintained in specific degree of differentiation by animal surroundings: the first being pabulum; the second, nervous; the third, vascular in character. "These animal bodies themselves partake in their degree of the character of vegetable and mineral modes of maintaining existence." "The enamel is maintained in sound condition exactly as crystals are in the mineral domain of natural bodies: the dentine is kept in condition by the to-and-fro movement of fluid in passages which admit it, after the manner of vegetable." "Bone is supplied by a mixed expression of these mineral and vegetable modes of endowment: cement may, in this sense, be classified as bone; although it is the compromise of nutrient activity, just midway between dentine and bone proper, of which the alveolar process is a legitimate type."

The gum tissue, wrought out of the blood corpuscles, and callagonic fibres, is well supplied with blood-vessels, but sparingly with nerves, especially the margin around the necks of the teeth, which is wrought into connective tissue fibres, and constitutes the "ligamentum dentium."

(It is impossible to do justice to the remainder of the paper without quoting it entire; but a few points only can be given here.—Sec.)

"There are two forms of wasting of the alveolar processes, viz., solution of the earthy material in the membranous or callagenous matrix,—the latter remaining entire in place—and solution of both matrix and mineral salts." "The latter occurs under two forms also," "atrophy,"

and "ulceration." Ulceration is the result of systemic debility or local uncleanness; "atrophy results from pauperized blood or mechanical interference." Mechanical disturbances are of two kinds,—foreign matters, and injudicious cleansing operations.

"The production of the alveolar processes is part and parcel of that of dentition; and the only reason why the alveolar processes are liable to wasting and reproduction to a degree not known to the "enamel and dentine, is in consequence of the difference of the mode of growth and nutrition." "In all cases of wasting caused by constitutional degeneracy, general treatment combined with local cleanliness will be the remedy." In cases of ulceration, cleanse, and use a strong solution of chloride of zinc. "After which, establish correct hygienic habits, and all is well."

The brush should be moved in a line with the tooth, from gum to crown, and never transversely. Polish off Nasmyth's membrane so soon as the crowns of the temporary or permanent teeth emerge from the gums.

The doctor then proceeded to speak at considerable length on the subject, and said the teeth were sometimes brushed too much, and poor brushes and injurious dentifrices are used. He recommended J. D. White's brush; said correct hygienic habit consists in keeping the mouth and teeth clean: remove everything that does not belong there. He only objects to injudicious manner and means.

Dr. Bogue does not think that Dr. Atkinson has ever seen teeth brushed too much, though he may have seen them brushed improperly, unless it may be in cases of ptyalism, or where the necks of the teeth have been denuded by salivary calculus or accident. If the mouth is opened, and the teeth brushed by longitudinal motion and a rotary movement, so that all four sides of the teeth are thoroughly cleansed and the gums properly excited, you will have no injury, but only benefit, from brushing.

Dr. Francis related a case of a lady who had for years been troubled with inflamed gums. At times they would swell so as to almost envelop the crowns of the teeth; alveolar process was much absorbed, and several of the incisors, both superior and inferior, had worked considerably out of position; patient had taken rather more than ordinary care of her teeth and gums, by daily cleansing, and occasionally using astringents. Her mother lost her teeth at an early age; and the children of the patient, of seven, nine, and twelve years of age, exhibited evidences of a similar trouble. He considers this case a constitutional difficulty. In the large majority of cases where gums are diseased, he attributes the cause to collections of extraneous matter which find lodgment about the necks, and fill the interstices of the teeth. Harsh, gritty substances, used as dentifrices, will cause irritation to the gums. He condemns the

use of charcoal; for, however finely powdered it may be, its sharp insoluble particles insinuate themselves into the gums, where they remain imbedded for years.

He objects to having dentists say that teeth are injured by brushing; believes that where one person brushes too much a thousand are remiss. He hardly ever sees teeth as clean as they ought to be, and lectures his patients continually for lack of thoroughness. He does not base his opinion from observation of office patients only, but from *general* observation. The American people have a bad habit of keeping their lips apart, and thus exposing their incisors. The rich and poor, residents of cities and country towns, all suffer in consequence of neglect to keep their teeth clean. People naturally shirk this duty, and are too ready to take advantage of statements made in regard to overbrushing. A physician once said to him that people in this country wore their teeth all out by brushing, and he always condemned the use of a toothbrush.

Intelligent dentists should be cautious about making statements that encourage people to neglect keeping their teeth clean.

O. A. Jarvis, *Secretary.*

ILLINOIS STATE MICROSCOPICAL SOCIETY.

The annual meeting of the State Microscopical Society was held on Friday evening, April 22d, in the library of the Academy of Sciences, Chicago, Dr. W. W. Allport in the chair.

It was moved and carried that Dr. W. W. Allport should be elected by acclamation. He declining the honor offered him, an election by ballot was made by the society. The results of the election were as follows:

President.—Mr. H. W. Fuller.

Vice-Presidents.—Dr. H. A. Johnson and Mr. S. A. Briggs.

Secretary.—Mr. Charles Adams.

Corresponding Secretary.—Mr. Charles Biggs.

Treasurer.—Mr. G. M. Higginson.

Board of Trustees.—Messrs. W. H. Park, Dr. W. W. Allport, I. Linton Waters, J. T. Ryerson, and E. H. Sargent.

The retiring President, Dr. Allport, then read his annual address, which embraced a description of the work accomplished by the society during the past year. The propriety of forming a national microscopical society was advocated in the course of the address. "Associations, organized on a large scale, have of late years become the order of the day, and constitute one of the most significant signs of the times. There is hardly a trade, profession, or calling in this country that has not its national association, and it is believed that a large measure of power

and usefulness, not otherwise attainable, has grown out of them. Why should not this new element of strength be utilized for scientific purposes? Why should there not be a national microscopical association? And what better place could there be for organizing such a body than Chicago? Who can better take the initiatory steps toward calling such a convention than the State Microscopical Society of Illinois? Should such a convention be called, and its details managed with the systematic practical talent and zealous energy that your President elect would bring to bear upon the undertaking, its success would be unquestionable.

"The proposed convention would not only bring together the best microscopists in the country and the best instruments of home production, but the leading opticians of Europe would be represented by their best men. There would be a display of choice instruments such as the world has never yet witnessed, and such an interest created in microscopical science that within five years there would not be a city of any considerable importance in the land without its microscopical society and first-class instruments. With the interest thus created by a convention in Chicago, our society would not only become more useful, but the pride of the city and the State."

The following is a list of the papers read:

Oct. 15, 1869, "On the Adulteration of Coffee," by Dr. Walter Hay.

Oct. 22, 1869, "On the Microscope, Combining Excellence and Cheapness," by Mr. J. Hankey.

Dec. 3, 1869, "On Light, and the Construction of the Microscope," by Mr. G. M. Higginson.

Dec. 10, 1869, "On the Magnifying Power of the various Eye-pieces, and the Correction for the Covering-glass," by Mr. W. H. Bullock.

Dec. 17, 1869, "An Account of the Early History and Progress of Microscopy in Chicago," by Dr. H. A. Johnson.

Jan. 14, 1870, "On Vegetable Parasites," by Dr. N. S. Davis.

Jan. 21, 1870, "On Trichina Spiralis," by Dr. F. Schaan.

Feb. 18, 1870, "On Vegetable Cells," by Dr. F. Schaan.

March 25, 1870, "On Vegetable Histology," by Dr. John Davies.

April 8, 1870, "On the Analysis of a Tumor, Microscopical and Chemical," by Dr. F. Schaan.

MAINE DENTAL SOCIETY.

At the call of the Committee on Dental Legislation, the society met at Augusta, Me., Jan. 26th and 27th, Dr. Thos. Haley, President, in the chair, and a large number in attendance. Minutes of last meeting read and approved.

H. W. Ladd, D.D.S., of Newport, was elected an active member.

Dr. Thos. Fillebrown, Chairman of Committee on Dental Legislation, reported that the bill approved at the last meeting was in the hands of the Legislative Judiciary Committee, who would grant us a hearing.

A copy of the bill was read, which provided: That the society shall annually elect, from the profession, an examining committee of three; the Governor of the State to fill any vacancies occurring by appointment; and that all dentists in the State, having been in practice five years previous to the passage of this act, or who shall receive a certificate from the Examining Committee, signed by the President and Secretary, and furnish evidence of a good moral character, shall be entitled to membership by paying $10 and signing the by-laws and constitution; and thereafter all persons without membership, or a certificate from the Examining Committee, or a dental diploma, shall not be entitled to demand or receive any remuneration for professional services rendered in the State.

A motion was made to withdraw the bill, and, after a lengthy discussion in regard to admitting persons with a medical diploma within the limits of the bill, also asking of the State an appropriation to establish a dental school, with power to grant certificates or diplomas, the motion was finally carried, and referred to the same committee to draft a new bill, embracing all dentists having had five years' practice, previous to the passage of the bill, within its limits, and thereafter only those having a dental diploma, and report at the semi-annual meeting; and in the interest of the bill and progress in the profession, it was urged to educate, as much as possible, public opinion up to that point.

A letter from Josiah Bacon was read, authorizing the society to appoint an A No. 1 dentist as agent to see that the licensees were protected in the exclusive use of rubber gum. The society could not see much protection in compelling a traveling dentist or quack to pay for a license, and that the protection would be wholly in the interest of J. B. & Co. The letter was laid upon the table.

Dr. Thos. Fillebrown read an able essay on "Anæsthetics," describing the properties and application of every known narcotic agent.

Drs. Fillebrown and Haley held clinics, filling teeth with gold, using automatic and hand mallets, and the rubber dam for the retention of moisture. Dr. Fillebrown demonstrated his method of applying the rubber dam to any tooth in the mouth.

The Committee of Arrangements reported work for the next meeting: General Business; Address by the President; Drs. Randall and E. J. Roberts, Essayists; Drs. Charles Pierce, Thos. Haley, and H. W. Ladd, for Clinics.

Adjourned to meet next August at Biddeford.

E. J. Roberts, D.D.S., *Secretary.*

BIOLOGICAL AND MICROSCOPICAL DEPARTMENT OF THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA.

The first annual reception of the Biological and Microscopical Section of the Academy of Natural Sciences of Philadelphia was held at the hall of the College of Physicians, northeast corner of Thirteenth and Locust Streets, Friday evening, May 13, from half-past seven to eleven o'clock.

The fine building was crowded the entire evening. The halls and stairways were decorated with choice flowers, presenting a most beautiful appearance. The Committee on Invitations consisted of S. Weir Mitchell, M.D., Director; William Pepper, M.D., Vice-Director, and William W. Keen, M.D., who did all in their power to make the visit of those in attendance an agreeable one. The various apartments of the college were used for different purposes.

On the first floor, the west room contained instruments by which experiments were given illustrating the physical phenomena of sound and voice. This apartment was under the management of Dr. J. S. Cohen. The east room, on the same floor, was under the direction of Dr. R. E. Rogers, of the University of Pennsylvania. Experiments were here performed showing the varieties of electricity and the recent advances in this science.

The west room on the second floor was devoted exclusively to microscopes and microscopic specimens. Of these, eighty-seven first-class instruments were on exhibition. On an average, each was worth $300, which would make the whole equal in value to $26,100. The collection of specimens shown by them embraced a great variety of objects in the vegetable and animal kingdoms.

The microscopes were under the charge of Dr. James Tyson and Messrs. Walmsley and Starr.

The east room of the second floor was devoted to anatomical models, instruments for physiological research, and apparatus for the medical application of electricity.

The models were of papier-maché, and represented the organs of digestion, respiration, circulation, and the nervous system of the lower animals and of man. Also, the eye and ear on a large scale, and the legs of the horse. These specimens were contributed from the Museum of the College of Physicians, by Dr. J. H. McQuillen and Dr. Wm. W. Keen.

The electrical departments exhibited various forms of medico-electric apparatus, among them the electrical bullet and probe, indicating the presence of the bullet in the human body. Various forms of batteries were displayed which are used to induce all sorts of electrical conditions. They were under the care of Dr. M. J. Grier.

The north room was used for the exhibition of microscopical objects and microphotographs in the gas microscope and stereopticon, by Dr. J. Gibbons Hunt. The exhibition was certainly a very fine one, and every person in attendance was both pleased and surprised at the very large and fine collection.

STATE DENTAL SOCIETY.

The State Dental Society of Pennsylvania will hold its second annual meeting in the city of Pittsburg, on the third Tuesday in June (21st instant), to be in session three days.

SUBJECTS OF ESSAYS FOR DISCUSSION.

1st. "Extracting Teeth," by Dr. John McCalla.

2d. "Mechanical Dentistry," by J. G. Templeton, D.D.S.

3d. "Treatment of Exposed Nerve," by Dr. G. B. McDonneld.

4th. "Definite Human Structure." Volunteer.

All necessary arrangements have been made by the Executive Committee for the comfort and accommodation of the members and delegates at the Monongahela House. It is hoped there will be a full attendance, as the members of the profession of Pittsburg extend a cordial greeting to the members and delegates of the State Society, and are anxious and willing to do all in their power for their entertainment and comfort.

Arrangements have been made for excursion tickets on the branch of the Erie Road leading from Williamsport to Pittsburg *via* Lock Haven and Bellefonte. All those who propose attending this meeting please apply to the undersigned for an order for an excursion ticket on the Pennsylvania Railroad.

S. Welchens, D.D.S., *Cor. Secretary.*

CHICAGO DENTAL SOCIETY.

At the annual meeting of the Chicago Dental Society, held Monday evening, April 4th, the following members were elected officers for the ensuing year:

President.—George H. Cushing, D.D.S.

1*st Vice-President.*—Dr. A. E. Brown.

2*d Vice-President.*—Dr. M. W. Sherwood.

Recording and Corresponding Secretary.—Dr. Edgar D. Swain.

Treasurer.—Dr. William Albaugh.

Librarian.—Dr. J. S. Marsh.

Executive Committee.—Drs. J. N. Crouse, M. S. Dean, C. E. Koch.

E. D. Swain, *Secretary.*

EDITORIAL.

DURABILITY OF AN OXYCHLORIDE OF ZINC FILLING.

In examining recently the teeth of a patient aged about fifty-five, who has been under my care for a number of years, my attention was attracted by a large oxychloride of zinc filling in a right upper second molar, extending over the mesial and masticating surfaces, which, on reference to the books, proved to have been introduced seven years ago, the tooth at that time being a mere shell, and the circumstances of the patient not warranting the expenditure requisite for a massive gold filling. Notwithstanding the time the filling had been in, it looked as well as the day it was introduced, showing no granulation on the surfaces, nor softening around the margins of the cavity, and on striking the filling with an instrument it appeared as hard as the surrounding teeth. An amalgam filling placed in another tooth, equally as frail, at the same time that the one just referred to was filled, had loosened and fallen out, while this maintained its integrity. My object in directing attention to this fact, is with the view of obtaining some data from reliable and trustworthy practitioners with regard to their experience in the use of this material. Heretofore I have only looked upon it as adapted to the filling of the bulbous portion of the pulp cavities of teeth, or as a temporary filling when the pulp was nearly exposed (not to speak of its employment in actual exposure of the pulp). My use of the article has been quite limited, and for the reason that in most of the cases where I have employed it as a temporary filling the material has granulated or softened, and in a very short time been washed away by the saliva. Whether this result has been due to defective material or imperfect manipulation in every instance, may be a matter of question; for in the case under consideration the result has been so satisfactory that it has inspired me with more confidence in the durability of such fillings than I have heretofore entertained.

If an improved material can be produced and with more careful manipulation in its use permanent fillings be formed in a majority of cases in which it might be used, it would be a great boon to the community and the profession. That such a compound will be found is a reasonable inference drawn from the experience of the past. The dream of to-day may be the accomplished fact of to-morrow.

I hope that this brief article may induce some who have had a more extended experience with the material, to give the results of their observations.

J. H. McQ.

ORAL SURGERY IN THE UNIVERSITY OF PENNSYLVANIA.

The importance of a thorough practical knowledge of the diseases and surgery of the mouth, jaws, and associate parts is exemplified by the recent establishment in the University of Pennsylvania of a Lectureship on Oral and Associate Surgery. This position has been assigned to Dr. James E. Garretson, a gentleman in every way qualified worthily to occupy it.

The dental profession will, we feel sure, regard with sincere gratification the establishment of this lectureship by such a time-honored institution.

It has now become so common for those preparing themselves for the practice of dentistry to graduate in medicine—the field of their operations so materially enlarging year by year—that in affording students the opportunity practically to familiarize themselves with this complex and difficult part of surgery, the college will, we have no doubt, add largely to its list of matriculants. We especially congratulate medical students on the manifest advantages the establishment of such a clinic must afford, as the lack of thorough acquaintance on the part of the general practitioner and surgeon with the pathology and therapeutics of the mouth and topographically associated parts has been too often made apparent.

The clinics are held on Wednesdays, at 12½ o'clock, and during the summer months are free to all respectable students and practitioners.

J. W. W.

OBITUARY.

SIR JAMES YOUNG SIMPSON.

The cable telegraph announces the death of Sir James Young Simpson, whose name is prominently identified with the introduction of anæsthesia in the practice of midwifery, and also as a discoverer of the anæsthetic properties of chloroform. His claim to the credit of priority in this discovery is, however, open to question, as Prof. Flourens, experimenting upon animals with chloroform, had, some time before, observed its effects, but was so struck with its dangerous power that he was far from recommending its use in surgical practice. Prof. Simpson is evidently entitled to the credit of having made an independent discovery, without any knowledge of the observations of Flourens, and, in addition, of having the boldness to employ it extensively in the practice of midwifery. His success in this respect was truly wonderful, for, while in the hands of other practitioners the fatality attendant upon

the employment of chloroform has been so frequent as to intimidate many from continuing its use, he appears to have been remarkably exempt from such results.

The very last of his professional writings was an article mainly devoted to a confirmation of the claims of Dr. Horace Wells as the discoverer of modern anæsthesia.

The following brief sketch of the deceased is from the pen of Dr. R. Shelton Mackenzie:

"Prof. Simpson was born in Bathgate, Linlithgowshire, Scotland, in 1811, and educated at the University of Edinburgh, where, in 1832, he received his degree of M.D. He commenced his professional career as assistant to Prof. Thomson, of the University, during whose illness he delivered a course of lectures with great success. In 1840 he was elected Professor of Midwifery in the University, a position which he held up to the time of his death. On the 19th of January, 1847, he applied the new discovery of anæsthesia to midwifery practice, this being the first authenticated instance in which it was used. He subsequently discovered the anæsthetic properties of chloroform, the general introduction of which into midwifery practice he urged as more manageable and powerful, more agreeable to inhale, and less exciting than ether, and as giving greater control and command over the superinduction of the anæsthetic state. In 1849 he was President of the Edinburgh Royal College of Physicians, and in 1852 President of the Medico-Chirurgical Society. In 1853 he was made a Foreign Associate of the French Academy of Sciences, and in 1856 received from the same a prize of two thousand francs for his discovery of anæsthesia and its introduction into midwifery practice.

"Prof. Simpson was a prolific professional writer, the most important of his works being confined to obstetrics. Of these a number have been reprinted in this country and are text-books in many of our medical colleges. The fame of Prof. Simpson was almost world-wide, and attracted patients from every quarter of the globe. His lectures are said to have contributed more than those of any other professor to the high reputation of the Edinburgh school of medicine. His claim to have first discovered the anæsthetic properties of chloroform has been very generally disputed, both in this country and in Europe, and his death may be the cause for reopening the discussion on this question."

J. H. McQ.

CHARLES W. GILL, D.D.S.

At a meeting of the St. Louis Odontological Society, held April 28th, 1870, at the dental rooms of Dr. Silvers, the following preamble and resolution were passed:

Whereas, In the death of Chas. W. Gill, D.D.S., this society has lost one of its most honored members, and we do most sincerely feel the loss; therefore

Resolved, That we extend our heartfelt sympathies to the bereaved widow and orphans, and that these proceedings be published in the dental journals.

G. H. SILVERS, D.D.S., *President.*

ADAM FLICKINGER, D.D.S., *Secretary.*

BIBLIOGRAPHICAL.

TRANSACTIONS OF THE AMERICAN DENTAL ASSOCIATION, at the Ninth Annual Meeting, held at Saratoga, August, 1869.

A copy of the above work has come to hand, and in looking over the contents the conviction expressed by the writer of this article years ago has again been forcibly impressed upon his mind—that it is an unnecessary outlay of money on the part of the Association to publish the transactions. If it were possible to present a volume whose contents would bear a favorable comparison with the transactions of other scientific bodies at home and abroad, it would be eminently proper to publish them. In this and previous years, however, with the exception of the transactions of 1865 and 1866, neither the quality nor the quantity of the material embraced in the proceedings have been of a character to induce the members of the Association to point with satisfaction and pride to the volumes; and certainly no one unconnected with the organization would be tempted to expend the amount required to possess them. When it is remembered that nearly five hundred dollars (the transactions for 1868 cost four hundred and seventy-seven dollars) are expended in this way annually, without corresponding benefit, but on the contrary rather detrimental to the reputation of the Association, the impropriety, not to say folly, of continuing this must become evident to those who will carefully consider the matter.

These comments are not intended as reflections on the Committee of Publication, who have done the best with the material placed in their hands, but rather as an expression of regret that the Association, embracing some of the best men in the profession, and whose discussions have proved, as a rule, eminently useful, practical, and creditable to those participating in them, should be placed in an unfavorable position the moment its printed transactions are contrasted with those of other prominent scientific bodies. How many of the reports of committees or voluntary essays give evidence of original research, or present old ideas in a new and more attractive form? What important discoveries, what improved methods of practice have been there first promulgated?

When these conditions are met, it will be time enough to publish the transactions; but until they are, the presentation of the proceedings in the dental journals, along with a synopsis of the reports, essays, etc., would better serve the interests of the Association, save it from unfavorable comparison and undesirable criticism.

In conclusion, it is difficult to understand why the Committee of Publication allowed the address delivered by the chairman of the Committee of Arrangements to appear in the transactions. They had the authority to withhold anything which they did not "judge to be of sufficient value," and should have exercised it in this instance at least. It was a sufficient infliction for the members to have been compelled to listen to that medley of prose and doggerel, and to be subjected to the mortification of finding it published in full on the following morning in the Saratoga papers, without the additional humiliation of its appearance in the transactions. The able and talented chairman of the Publication Committee evidently allowed his kindness of heart toward the author to sway his judgment in this instance. J. H. McQ.

CORRESPONDENCE.

THE NEW YORK LAW "TO IMPROVE AND REGULATE THE PRACTICE OF DENTISTRY."

To the Editor of the Dental Cosmos:

A little more than two years since, the Legislature of the State of New York passed a law to regulate the practice of dentistry in the State of New York, for the first time giving our profession a legal recognition in this State. The title of the act is, "An act to incorporate dental societies for the purpose of regulating and improving the practice of dentistry in this State."

The object aimed at is sought to be effected through the agencies of incorporated societies. The law provides for the establishment of eight "District Societies" and a State Society. The State Society is made up of delegates from the district societies (each district being entitled to eight delegates) and of permanent and honorary members. The law also provides for District and State *Censors*. The law is wholly free from all compulsory or coercive features, as regards those dentists now in practice, but provides that *no dental student* shall be entitled to an examination for the State diploma till he shall have studied and practiced dentistry four years. The original law simply provided for the conferring of a *diploma* by the State Society, but an amendment has just been passed by the Legislature, authorizing the society not only to confer a diploma, but also a *degree*, that of "Master of Dental Surgery

(M.D.S.)," and it is to this feature that I desire to call the attention of our profession. Whether it was expedient to ask for a law conferring a degree upon those who had never received a collegiate education, and if so, what should be its title, have been questions eliciting much discussion. "The Dental Society of the State of New York" has seen fit to take a stand in this matter; and the qualifications entitling dentists to an examination by our State censors, and, if found worthy, to our diploma, may be seen from the following quotation from the law:

"§ 9. All dentists in regular practice at the time of the passage of this act, and all persons who shall have received a diploma from any dental college in this State, and all students who shall have studied and practiced dental surgery with some accredited dentist or dentists for the term of four years, shall be entitled to an examination by said board of censors. Deductions from such term of four years shall be made in either of the following cases:

"1. If the student, after the age of sixteen, shall have pursued any of the studies usual in the colleges of this State, the period, not exceeding one year, during which he shall have pursued such studies shall be deducted.

"2. If the student, after the age of sixteen, shall have attended a complete course of lectures of any incorporated dental or medical college in this State, or elsewhere, one year shall be deducted."

It will be seen by the above quotation that *no restriction is made in regard to residence*, but all dentists complying with the above prerequisites, whether they are residents of Maine or Georgia, are entitled to an examination by our State censors.

In view of this fact, would it not be *good policy* for all of the States having legal enactments to regulate the practice of dentistry, to adopt a similar course? The *degree* adopted by our State Society and sanctioned by our Legislature, was the result of a unanimous vote of the society, after the matter was fully discussed, on several different occasions. The title of "Master of Dental Surgery" seems to cover all the ground which can be well claimed. It is at once simple and distinctive in its character, and we can but express the hope that it will be adopted by all of the States having any law giving them the authority. The annual meeting of our State Society will be held in the Capitol, at Albany, commencing Wednesday, June the 29th, and *the "Board of Censors" will convene at the Delavan House (Albany) on Tuesday, the 28th*, the day previous, prepared to examine those who may present themselves for this purpose.

A. WESTCOTT, *Pres't Board of Censors.*

SYRACUSE, N. Y., May 10, 1870.

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

"*Ranula; or Encysted Tumors of the Ducts of either the Submaxillary or Sublingual Glands*—Syn. *Batrachos; Frog-Tongue.* Lecture delivered at Bellevue Hospital Medical College. By Prof. Frank H. Hamilton, M.D. (Reported for *The Medical Gazette.*)—The term ranula, from the Latin *rana*, has by some writers been restricted to obstructions of Wharton's duct, and by others to obstructions of the sublingual ducts. There is sufficient evidence, however, that a tumor answering to the description of a ranula is found occasionally in the duct of the submaxillary gland, and sometimes, also, in the ducts of the sublingual. Serous cysts may also arise in the substance of either of these glands, probably in their connective tissue, independent of their ducts. Tumors having some points of resemblance to a ranula may originate in obstructed muciparous glands. Finally, there are many examples of enlarged submaxillary bursæ, which very much resemble a ranula in their external appearance. It is proposed, however, to limit the term to obstructions of the ducts of the submaxillary and sublingual glands. To the other forms of encysted tumors resembling ranula the term 'spurious' may be conveniently applied.

"The differential diagnosis between these various forms is usually attended with so many difficulties, that it seems proper to make a brief allusion to the anatomy and situation of the submaxillary and sublingual glands.

"The submaxillary glands are situated below the inferior maxilla, in the anterior portions of the submaxillary triangles. They are covered by the integument, the platysma myoides muscles, and the deep cervical fascia. The duct of each gland, called the duct of Wharton, commences by numerous radicles within the substance of the gland, forming a single tube of about two inches in length, and with walls much thinner than those of the parotid duct, terminating in a narrow orifice on the summit of a small papilla at the side of the frænum linguæ.

"The sublingual glands are the smallest of the true salivary glands, weighing usually about one drachm; they are situated beneath the mucous membrane of the floor of the mouth, on each side of the frænum linguæ, reaching from the anterior margin of the submaxillary gland to the symphysis mentis. Their ducts, of which there are from eighteen to twenty for each gland, open into the mouth on the elevated crests of mucous membrane, caused by the projections of the glands on each side of the frænum.

"While in some cases an exact differential diagnosis may be impossible, it is not difficult in many examples of tumors presenting the general appearance of ranula to determine the organ or structure to which they belong.

"An obstructed submaxillary duct, in case the obstruction is at or near its origin, forms an ovoid, elastic, translucent swelling, first noticed beneath the tongue on one side of the frænum; and it does not press downward and give to the throat the peculiar fullness below the

chin from which its name ranula is derived, until it has attained considerable size. Usually such tumors are not seen of a size larger than an almond; but in a few instances they have been known to enlarge to such a volume as to threaten suffocation. When opened, they are found to contain a perfectly clear, albuminous fluid, of the consistence of the white of an egg, with an alkaline reaction. They sometimes contain solid phosphatic concretions; and in such cases the presence of these bodies may be recognized by the peculiar feel before the sac is opened.

"When these tumors attain considerable size they involve sometimes the whole length of Wharton's duct, including the canals leading into the gland; under which circumstances the gland occasionally undergoes absorption, in consequence of the pressure, and the tumor ceases to enlarge.

"Obstructions of the sublingual ducts give rise to similar tumors, commencing first within the mouth, and subsequently pressing downward, causing in some cases, also, atrophy of the gland, and a consequent arrest of the growth of the tumor. The fluid found in the sublingual ducts differs from that secreted by the submaxillary gland only in being a little more viscid; but Rokitansky affirms that calculi occur in these ducts much more often than in the submaxillary. They are usually white and friable, varying in form and in size from a millet-seed to a hazel-nut.

"Of both these forms of tumors there may be presented rare and exceptional examples, in which, the obstruction taking place remote from the orifice, and perhaps near the glands, the pellucid oval projection beneath the tongue does not occur; but from an early period there is quite as much prominence caused by the tumor below the chin as in the floor of the mouth. When the tumor commences in the ducts within the gland itself, as I have seen happen several times, the floor of the mouth is only encroached upon at a late period. But their anatomical character may still be determined by the position of the tumors and their previous history. I have sometimes been able to determine whether the ducts of Wharton were involved, by a careful examination of the orifices of the ducts and by the salivary jet.

"Those tumors which result from obstruction of the muciparous glands are more circular in form, and probably never attain much size, or press downward into the neck. They contain an abundance of epithelial cells, degenerated epithelium, oil cells, and granulation cells, giving to the contents the consistence of oil or of putty. They are therefore opaque, although covered only by mucous membrane, and in this regard differ from the two forms before mentioned.

"Tumors formed from the connective tissue in this region are not translucent. They lie usually more deeply, and contain serum only, very slightly colored, and probably some phosphates or calcareous concretions.

"Finally, tumors occasioned by enlargement of bursæ lie deeper from the floor of the mouth, projecting less into its cavity, and much more below the chin. They contain a clear serum, or serum colored by more or less blood corpuscles. These are sometimes congenital.

"It may be proper to call attention again to the fact, that I have enumerated two forms of true ranula: one in which the obstructions of the duct takes place at or near its orifice, and which is characterized

by the translucent sublingual tumors, accompanied with more or less projection below the chin; and a second, in which the obstruction occurs at or near the gland, and there is no sublingual translucent tumor, but only a general uplifting of the floor of the mouth, and much greater prominence of the tumor below the chin.

"There is also a third condition to which I called attention in a communication made to the *Gazette* in February, 1868, in which the obstruction occurring in any portion of the duct, is partial and temporary, and does not occasion, properly speaking, an encysted tumor, but a sudden dilatation of all the radicles situated within the gland, causing the gland to enlarge, especially during the act of mastication. In such cases, as in one example cited, an active cathartic may accomplish relief; or the fluid may be expressed by pressure upon the gland. If, however, the obstruction is continued a sufficient length of time, the walls of the ducts yield at one point or another, and a cyst is formed.

"*Treatment.*—The treatment of that form of true ranula caused by obstructions at or near the orifice of the ducts consists in opening the sac, evacuating its contents, and maintaining or re-establishing the orifice.

"It has been observed that the fistulous orifice thus made cannot always be maintained if the sac is simply incised; but that it is often necessary to remove a large portion of the sac, so as to prevent the edges from falling into contact; and that a successful result is more certainly insured by cauterizing the edges and interior of the sac, and then laying a bit of lint between the edges of the wound.

"In case the obstruction is at or near the gland and the substance of the gland itself is involved in the tumor, as may be indicated by the fact that the tumor does not present the usual translucent appearance under the tongue, but seems to lie deep under the floor of the mouth, projecting chiefly beneath the chin, between it and the hyoid bone, then it will be more prudent to open the sac from the most salient point below the chin; and after the lapse of several days, when the sac has been thoroughly drained, to seek to destroy its secreting surface by injections of tincture of iodine, tents, etc. Opening the sac from the mouth, under these circumstances, is attended with the hazard of hemorrhage; and as it must be kept open a long time, it is exceedingly annoying to the patient; it is more difficult to maintain the fistulous orifice; and finally, it is not so likely to result in a complete obliteration of both the duct and the gland, which must be now the chief point to be attained

"Moreover, it is this form of ranula which is most likely to be confounded with simple serous cysts developed in the substance of the gland, or in the connective tissue adjacent, or with bursal tumors, in either of which latter cases complete destruction of the secreting surfaces, and not the re-establishment of the original canal, is to be desired. The destruction of the cyst can be accomplished with the most certainty through an external, free, and depending opening.

"It is true, however, that in the case of simple cysts, here as elsewhere, it is preferable to remove the cyst entire by dissection; but the difficulty in any case of making an accurate diagnosis, and the embarrassments which often attend the destruction of encysted tumors in this region, will justify the surgeon generally in resorting to incision rather than excision.

"Finally, the treatment of these various tumors, including ranula properly so called and spurious ranula, may be summed up as follows:

"In case of a well-characterized, translucent ranula, presenting itself almost exlusively within the mouth, an attempt must be made to re-establish the opening of the duct by free excision of the projecting portions.

"In case of a deep-seated ranula, probably involving the gland, it is more prudent to open from the integument; and success is more certainly insured by continual suppuration, causing thereby a destruction of both the duct and the remnant of the gland itself..

"In case of a bursæ, the same course should be pursued as in the deep-seated ranula.

"And while in case of a simple serous cyst, formed either in the gland or the adjacent connective tissue, if the diagnosis were complete, it might be proper to attempt its extirpation by dissection; yet considering the difficulty of diagnosis, the hazards and difficulties of the operation, and the generally successful results of incision followed by injections, the latter course must generally commend itself to the prudent surgeon—that is to say, the same treatment as for a deep-seated ranula or a bursa.

"*Encysted Tumors of the Parotid Gland and of the Ducts.*—The parotid gland, situated upon the side of the face in front of the ear, is the largest of all the salivary glands. Its excretory duct originates by numerous radicles, which unite within the substance of the gland to form a common duct, called the duct of Steno, which passes almost directly forward over the masseter, penetrating the buccinator, and after coursing a short distance between the buccinator and mucous membrane, enters the buccal cavity opposite the second molar of the upper jaw. Its walls are dense, consisting of an outer or fibrous coat, containing contractile fibres, and an inner or mucous coat, lined with columnar epithelium. The canal is about the size of a crow-quill.

"The secretion of the parotid is clear and watery in appearance, has a mucilaginous feel, it is alkaline in its reaction, and, among other ingredients, contains always a compound of sulpho-cyanogen.

"Obstructions of the duct of Steno have not hitherto been classified as tumors, and probably for the reason that they cannot in any case be subjected properly to the same treatment which is applicable to other tumors; that is to say, they can never be properly treated by extirpation—the only proper surgical expedient is to attempt to re-establish the communication with the buccal cavity; but the same objection will hold good against recognizing obstruction of the ducts of the submaxillary and of the sublingual glands as tumors. I prefer to consider these obstructions in this connection.

"*Obstruction of the Duct of Steno at its Orifice.*—Occasionally, as the result of abrasion and consequent adhesion of the mucous membrane at the point where the duct opens into the mouth, a small pellucid tumor is formed under the mucous lining, which, after a time, opens spontaneously, and a cure is effected.

"*Obstructions of the Duct of Steno in its Continuity, from Adhesions caused by Wounds, Ulcerations, Gangrene, etc.*, causing in some cases a temporary elastic, oblong elevation on the side of the face; but the saliva soon makes a way for itself through the unsound tissues, and causes a fistula upon the side of the face, which is exceedingly difficult to close. There is, perhaps, no better plan than to pass a pretty large silk seton through the orifice of the fistula into the mouth, tying its two ends upon the chin; after the lapse of two or three weeks, it may

be removed and the fistula closed externally by freshening its edges and uniting them with silver sutures.

"*Encysted Tumors from Calculi in the Duct of Steno.*—These tumors present themselves as hard, oblong nodules on the inside of the mouth; the presence of the calculus having sometimes caused inflammation and adhesion of the walls of the duct, so that the sac contains saliva and pus, as well as the calculus.

"These calculi are generally composed of the phosphate of lime, with a triple phosphate.

"They must be laid open and the calculus removed from the inside of the mouth, so as to avoid a salivary fistula.

"*Encysted Tumors caused by Obstructions of the Ducts of the Labial, Buccal, Lingual, Pharyngeal Glands, and Follicles of the Mouth —Anatomy of the Glands.*—The labial, belonging also to the system of salivary glands, are situated beneath the mucous membrane covering the orifice of the mouth, and especially the inner surface of the lips.

"They are rounded in form, and of about the size of a small pea, opening by minute orifices upon the surface of the mucous membrane.

"The buccal glands, similar to the labial, but smaller, are situated between the mucous membrane and buccinator muscle, except two or three, called molar glands, which lie between the masseter and buccinator; these latter are somewhat larger than the submucous buccal glands, and their ducts open opposite the last molar tooth.

"There are also a few small glands of the same character under the mucous membrane of the posterior half of the hard palate; those of the under surface of the soft palate are larger and more numerous.

"Those of the tongue (lingual) are chiefly on the posterior third of the dorsum, and a few are found along its edges and at the tip.

"In the pharynx, especially at its upper part, these glands are numerous.

"In addition, the mucous membrane of the mouth is supplied with numerous simple and compound mucous follicles; they extend over the entire surface of the tongue, but are most numerous at the posterior portion.

"The tonsil, situated between the two pillars of the soft palate, is composed of lacunæ and closed vesicles, imbedded in connective tissues and vessels. The secretion is a viscid mucus, designed to lubricate the food in its passage through the fauces.

"*Diagnosis and Treatment.*—Encysted tumors of the labial glands are of frequent occurrence, presenting themselves as small, round, vesicular elevations, with semi-opaque walls, seldom attaining a greater size than a small pea, and containing a thin, transparent, or nearly transparent, muculent fluid.

"They are ofren ruptured spontaneously, but in that case they generally reappear very soon.

"Simple puncture and evacuation of the contents is generally followed by the same result.

"Excision is, therefore, the only reliable resource. This may be practiced by seizing the vesicle, with a small portion of the adjacent tissues, and excising the whole with a pair of scissors. In some cases I have found it necessary to remove the entire gland, the removal of the expanded duct being followed by a renewal of the cyst.

"Very recently I have had occasion to remove a cyst formed in one

of the buccal glands; but the remaining muciparous glands of the mouth and pharynx seldom become sufficiently obstructed to cause tumors, or, if they occur, it is probable that their walls easily give way, and a spontaneous cure is effected.

"When they occur upon the tongue, as happens now and then, especially near the middle of the dorsum, it is not advisable to attempt their extirpation. A case was reported very recently in which an operation made for the removal of an encysted tumor of the tongue proved fatal. They should be treated by incision and injection. Indeed, this observation applies to all simple encysted tumors which may form in the mouth and remote from the orifice."

—

Ranula, Treatment by Iodine.—"Of all the methods I have tried, this is by far the most satisfactory. The tumor is seized and secured by a pointed hook, and a large portion of the cyst having been snipped off with a curved pair of scissors, the sac is filled with tincture of iodine, which, after remaining a few minutes, is allowed to escape by the mouth, and its place supplied with oiled lint, which is renewed daily, the cavity being previously well washed out. The subsequent swelling speedily subsides, and is rarely followed by much suppuration."—(Dr. Baillie, "Hints in Practice," *Indian Medical Gazette* and *Med. Times and Gaz.*)

—

Reproduction of Bone. Proceedings of the Medical Society of the County of New York. (*Medical Record.*)—"Dr. Wm. R. Whitehead read a paper upon this subject. Assuming that the conditions which regulate bone growth, could we fully discover them, would be found as constant in their action as those which govern the phenomena of inorganic nature, the speaker proceeded to give his views of the true method of investigation to be pursued, and to review the history of opinion upon the subject of osteogenesis, touching also upon the general history of experimental research in medicine and its cognate sciences. It was important to seek for the minor laws that modify the working of the more general ones, producing perturbations which, whether seen in the growth of a cell, in the formation of a crystal, or in the motions of a planet, will prove, when their laws are discovered, to be not fortuitous, but regular. And to aid in these researches, it was important to bring the results of a broad generalization to bear upon each limited department of study.

"To Duhamel, in the last century, when France was the theatre of the highest intellectual activity, was due the discovery of the property of the periosteum to reproduce bone. The theory, suggested by his studies in vegetable physiology, he established by experiment. It was opposed by his contemporaries and rejected by Bichat and Scarpa, who for a time held almost undisputed sway over medical opinion. Later, Dupuytren admitted the action of the periosteum in forming the 'provisional callus;' but it was only about a century after Duhamel's discovery that it was forced into general recognition by the efforts of many investigators, prominent among whom was Flourens. At present Sédillot is the leading opponent of the doctrine that the detached periosteum has the power to reproduce bone, maintaining that the only way of insuring regeneration, in cases of necrosis, is to scoop out (*évider*) the bone in such a manner as to leave its outer layer still adhering to the

periosteum. He has been ably refuted, and the efficacy of subperiosteal resection fully established, by Holmes and many others. Among the surgeons in this city whose experience upon this point would seem to be conclusive, may be mentioned Dr. James R. Wood.

"But the repair of bone is not left dependent upon the periosteum alone. The medullary tissue has a similar power, which, as Goujon has conclusively shown, it may exhibit after transplantation into vascular parts, especially in early life, when it contains an abundance of calcareous salts. But it is far less likely to produce bone than is the periosteum, under similar conditions, and the bone produced is soon absorbed, while that originating from periosteum is apt to be permanent. As to the so-called medullary membrane, or endosteum, its functions, whether of reproduction or absorption, cannot be regarded as settled; and indeed its very existence is in dispute.

"Although the medullary tissue stands next to the periosteum in osteogenetic power, yet it shares this with nearly all cellular and fibrous tissues, and even muscular tissue may become ossified under favoring conditions. These conditions would seem to be chiefly long-continued or repeated irritation, in connection with 'a perverted assimilation of the calcareous salts of the blood.' The presence of some of the proper osseous tissues in a state of irritation is also regarded by Ollier as conducive to ossification of the neighboring parts.

"The effort to obtain reproduction of bone by transplantation of periosteal flaps (as distinguished from subperiosteal resection), so successful in many of the experiments upon animals, has not commonly met with the same success in man. Still, its satisfactory results, under good conditions, are sufficiently numerous to warrant its recognition as an important surgical procedure, likely in the future to receive a wider application. At present, perhaps the best illustrations of its value are to be seen in Langenbeck's operation for closure of cleft of the hard palate, known as mucoperiosteal uranoplasty. The speaker had—in two cases of this operation which he had published—convinced himself that the cleft in the palate might thus be closed by a growth of new bone.

"In conclusion, Dr. Whitehead related three experiments of subperiosteal resection which he had made upon rabbits, and exhibited the specimens showing their results.

"Dr. J. C. Nott said that, some thirty years ago, Dr. Toner, now of California, then a young man commencing practice, had published several cases of onychia, in which he had removed the phalanx, leaving the periosteum, and obtained a reproduction of the bone. Impressed by these cases, the speaker had himself followed this practice ever since, and with success. He had heard that old Dr. Dudley was accustomed to treat onychia in the same manner. In a case of necrosis of the upper jaw he had, in removing the bone, left its periosteum in situ, and the bone was regenerated.

"Dr. Sayre had from his earliest practice removed phalanges in the manner above described, which he had been taught by Dr. Dudley. It was very important, in such cases, to dress the finger, during the process of healing, so as to preserve its normal shape; otherwise the nail would become hooked over, or some other deformity result. One of the speaker's sons had smashed his finger throughout its whole length, so that at first amputation seemed unavoidable. But by careful preservation of all the periosteum almost complete reproduction of all the pha-

langes was secured, and the finger was now serviceable, though somewhat shorter than its fellows. The doctor had resected subperiosteally four and one-half inches of the femur of a young man. The bone was completely reproduced, the limb equal in length to the other; and the lad had last winter won a prize in a skating match.

"Dr. Chadsey related a case of necrosis of the entire tibia, which was removed as a sequestrum; new bone having formed around it firm and serviceable, though at first large and misshapen. It gradually became reduced to about the natural size. A patient of his had been kicked by a horse above the eyebrow, severely comminuting the outer table. In removing the pieces of bone, the periosteum was left attached to the skin; and the lost bone was restored with no depression or deformity.

"Dr. Bibbins referred to two cases of necrosis of the lower jaw, from gangrenous stomatitis in children, which had come under his care at the Nursery Hospital, Randall's Island, in 1850. In one of them he had resected the bone from the canine tooth to the angle of the same side; in the other, from the canine tooth to the angle of the opposite side. The periosteum was carefully left in both cases, and in both the part removed was reproduced, though of course without teeth or alveolar process."—

Vulcanite Obturator lined with Aluminium.—"At a recent meeting of the Medical Journal Association, Dr. Whitehead presented a patient from whom he had removed, about three years ago, a tumor involving the superior maxilla and two-thirds of the malar bone. An opening remains in the roof of the mouth, about two-thirds of an inch long and half an inch wide, resulting from the removal of the maxilla, which Dr. W. purposes closing permanently by the operation of uranoplasty. The patient is now wearing a plate made by Dr. Crane, an ingenious dental surgeon of Brooklyn, upon a novel plan. The first plate constructed by him for this case was entirely of red vulcanized india-rubber, and while using this the patient suffered greatly from irritation of the mouth and gums. Attributing this result wholly to the sulphuret of mercury (vermilion) used to color the rubber, Dr. Crane conceived the idea of lining the plate with a thin layer of aluminium, whereby it has since been worn without inconvenience. This question of the possible noxious action of mercury from india-rubber dental plates is one of considerable practical interest. We are inclined to think that it depends to a great extent upon care and proficiency in the process of vulcanization, but should be glad to learn the views of those who have greater personal experience in the matter."—(*Medical Gazette.*)

"*Staphyloraphy—Operation for Improving the Voice after.*—However successful an operation for closing a fissured palate may be, it is seldom that the voice is free from a very disagreeable nasal twang, owing to the soft palate being merely a tight curtain, so placed as to allow air to pass freely into the posterior nares. With a view of remedying this defect, the author lately divided the soft palate on both sides by incisions passing downward from the hamular processes to the free edge of the palate. The effect was certainly to improve the voice, but it is premature as yet to form a strong opinion as to the ultimate results of the operation."—(Mr. F. Mason. *Braithwaite's Retrospect* and *Chicago Med. Times.*)

"*Imperfect Intonation and its Cause.*—M. Trélat has brought before the Surgical Society of Paris the case of a family in which the father speaks imperfectly, owing to antero-posterior brevity of the hard palate, and a notching of the same toward the velum. Mother quite healthy. By a first husband she has a son, now seven years old and in good health; by the present or second husband she has had two daughters, one who died at six months and who sucked with difficulty from 'a hole in the velum,' and a little girl, the present patient, now three weeks old. It would appear that this child was born with a sound but thin velum; after some time an aperture formed at the junction of the hard with the soft palate, which aperture is now small and visible. It is surrounded by a very thin substance, and seems to be the result of the giving way of the latter. M. Trélat does not believe that cleft palate is the sole cause of nasal intonation, but that the antero-posterior and lateral narrowness of the hard palate has much to do with it. In this manner, if he is right, would be explained the persistence of the nasal twang in cases where the perfect union of the margins of the cleft has been obtained by operation."—(*Lancet.*)

"*Loss of Speech after Chloroformization.*—A servant-girl, says the *Allg. Med. Centr. Zeit.*, for the sake of the extraction of a tooth, inhaled chloroform for a very short time. On awaking she had lost the power of speech; could not utter any sound whatever, and remained in that state for five weeks, in spite of various remedies, especially electricity. After this time she began to speak in a low tone, and was put under appropriate treatment. It is supposed that she suffered during anæsthesia from rupture of some cerebral vessel. She had never been hysterical."—(*Ibid.*)

Death from Chloroform.—"At Accrington, on the 19th ult., a young woman named Susannah Horsfall went to Dr. Millar's surgery to have some teeth extracted. The teeth were difficult to extract, and chloroform was administered. After having pulled out the third tooth, Dr. Millar observed that the patient was dying; and life was soon extinct. She had had chloroform a week before, but it did not take effect. From the report of the coroner's inquest on the 21st, the chloroform seems to have been properly exhibited after due precaution. The verdict of the jury was, 'Death from syncope produced by a dose of chloroform skillfully administered.'"—(*Chemist and Druggist.*)

Nitrous Oxide as an Anæsthetic in General Surgery.—Chas. Jas. Fox, M.R.C.S., L.D.S., Dental Surgeon to the Dental Hospital of London and to the Great Northern Hospital, favors (*Lancet*) the use of nitrous oxide as an anæsthetic in general surgery, for the following reasons:

"1st. Its safety.

"2d. The rapidity with which anæsthesia can be induced—viz., from 50 to 100 seconds.

"3d. The readiness with which a patient can either be kept for a prolonged period in the anæsthetic state, or, if the surgeon so wills, can be promptly and thoroughly awakened.

"4th. Because it is actually pleasant to the patient to inhale, and, therefore, much fright and mental distress is avoided, diminishing the danger of death by syncope.

"5th. Because the recovery is usually bright, pleasant, and complete, any after-discomfort being extremely rare.

"6th Because sickness has never, to my knowledge, occurred during the administration of this anæsthetic, and but *rarely* afterward.

"1st, then, as to its safety. As far as we can judge from statistics, up to the present time, it is the safest anæsthetic in use; but then, with but few exceptions, it has only been used in short operations, such as the extraction of teeth. On the other hand, it must be borne in mind that many of the deaths from chloroform have occurred in just such cases, and, moreover, that when greater operations have been contemplated, death from chloroform has most frequently occurred in the first few minutes of inhalation. Nevertheless, until nitrous oxide has been extensively used in capital operations, I cannot plead more positively for its greater safety than I have already done, further than to repeat that, as far as it has been tried, it *has* proved the safest anæsthetic, and we have every right, upon the evidence before us, to trust it until the reverse is proved.

"2d. The rapidity with which anæsthesia can be induced, varying from a minute to a minute and a half, results in a great saving of time to an operator at a hospital, his colleagues, and the assembled students. Besides, all sense of consciousness to surrounding objects is most frequently lost in from thirty to sixty seconds, although not insensibility to pain; apart from the saving of time, surely this must be admitted to be an additional source of safety to the patient, inasmuch as a long period of nervous fright and terror is quickly passed over, and there is, therefore, far less danger of that death from fright to which we so often hear allusions made when a fatal chloroform case occurs.

"3d. With regard to my third reason, it may happen that a patient is brought to the table with an injury to be painfully examined with bistoury and probe, with the understanding that possibly a severe operation may be the result. Should it happen, as it sometimes does, that the result is favorable, how preferable it is to be able to allow patients to wake up promptly to the pleasing intelligence, rather than that they should endure hours of depression and nausea for so simple a matter; on the other hand, should operation be determined upon, there is no difficulty in maintaining the anæsthesia.

"4th. The fact that the gas is pleasant to inhale tends also very far to reassure a nervous patient. In over 1500 cases I have not met with more than three or four who professed to dislike the slightly sweetish taste of the gas, and the probability is, had they inhaled chloroform, this dislike would have been much more strongly expressed.

"5th. The bright and rapid recovery, free from all unpleasant results, appears to me a great argument in favor of the gas. It often happens that short, sharp operations have to be performed, which in themselves would not incapacitate patients from leaving the hospital at once; but, from the effects of chloroform, they are obliged to remain on a bed in the ward, sometimes for hours after, to the additional labor of nurses and the distress of their friends; whereas, if they have inhaled nitrous oxide, they are able at once to leave the hospital, feeling nothing worse than the smarting of the wound.

"A singular case in evidence of the fact that no after ill effects result from the gas I have permission to mention. It is that of M. Blondin, who on two occasions performed all his most difficult feats on the high

rope, 400 feet long, within three hours after I had given him the gas for some extremely severe dental operations. If ever a clear head and steady nerves were needed so soon after an anæsthetic, it must be confessed his was a pretty severe test for them. That the gas is actually pleasant to patients I have been repeatedly assured by them, and those who have had chloroform often previously, have warmly declared their preference for the gas. I am speaking now especially of surgical cases.

"6th. With reference to the sixth argument in favor of the gas, in many operations it is a very important one; but it is one that can only be maintained after a prolonged trial of the gas in severe operations. As yet, I have never seen a patient become sick in the course of inhaling; only once I have known a patient express herself as feeling sick from nervousness, and she was actually so immediately the face-piece was applied. She told me that the slightest unusual excitement brought on sickness with her. In the large number of cases that I have now seen I have only met with four cases of sickness after the operation, and the patients were all right directly they had been sick."

Syphilitic Constitution.—Mr. Morgan observes (*Med. Press and Circ.* and *New Orleans Jour. Med.*): "Various, indeed, have been the suggestions as to the nature of the syphilitic poison; if analogous to hydrophobia, or a ferment in the system, or an 'algoid vegetation,' as lately suggested, it is, unhappily, too true that the poison, once introduced, is so capable of causing an alteration of the whole organism that, to use the words of Lancereaux, 'the individual has acquired the syphilitic constitution, and is no longer a normal being, but an individual deviating from the type, having undergone a kind of degeneration.'"

"*Fracture of the Inferior Maxillary.* Reported by R. Wisong, M.D., Baltimore, Md.—Peter S., a railroad employee, called at my office Dec. 31st, 1869, and stated that some six days previous he had received a blow from a billy on the left side of the lower jaw. Upon examination I found the bone fractured vertically to the right of the symphysis, between the central and lateral incisor teeth. There was considerable inflammation, swelling, and great soreness of the parts. The fractured end of the bone showed distinct lateral separation. The right portion was depressed to the extent of $\frac{3}{8}$ of an inch. Upon consultation with my friend, Dr. R. B. Winder, a dentist of this city, I concluded to use a modification of Dr. Bullock's submaxillary splint, after I had carefully adjusted the fractured ends of the bone. Dr. Winder, assisted by his partner, Dr. Bonton, took in wax an accurate impression of the lower jaw, and manufactured for me a vulcanized rubber splint—which fitted over and covered all the teeth except those at the joint of fracture at this point. The teeth were allowed to show. This arrangement enabled me to see at a glance if the fractured ends were in juxtaposition, for so long as the teeth were in line, there could be no displacement. This opening also enabled me to syringe out any accumulation of food or secretion between the splint and teeth or gums. The object in covering all the teeth, except at point of fracture, with the dental splint, was, that they, instead of the gums or alveolar processes, might receive the pressure.

"To this dental splint we attached two stout wire hooks, which came

out at the corners of the mouth, with sufficient curve to avoid pressure on or contact with the lower lip. To these hooks I fastened, instead of cords, as recommended by Dr. Bullock, pieces of annealed wire, which extended below the submaxillary splint. These were secured with thumb taps. With this arrangement I could graduate the pressure with greatest nicety.

"This splint, when properly adjusted, allows the patient to eat and talk without fear of displacing the fractured ends of the bone, and meets all the requirements of such cases. The man upon whom I used it suffered not the slightest inconvenience—wore it only fifteen days—with the most satisfactory results."—(*Medical Bulletin.*)

"*Swallowing of Indigestible Substances.*—Sir William Fergusson calls attention to the case of a sailor, aged twenty-three, who was in Guy's Hospital in 1853, and who, in the course of ten years, swallowed at different times, at least thirty-five knives. Some of these, or eroded portions, were occasionally vomited or passed per anum. He finally died from exhaustion, and, on opening his body, forty different pieces of blades and handles were found in the abdomen."—(*Medical Record.*)

Molecular Movements of Microscopic Particles. C. R. C. Tichborne, F.C.S., etc. (*Med. Press and Circular.*)—"Prof. Stanley Jevons has lately read a paper 'On the So-called Molecular Movements of Microscopical Bodies,' before the Manchester Literary and Philosophical Society. Minute particles of unorganized matter suspended in water exhibit movements which were formerly mistaken for the movements of living animalculæ. This motion is exhibited more or less by all substances which are reduced to a sufficiently fine state of division—1–5,000 in linear magnitude to 1–50,000. Suggestions have been put forth that this motion is due to heat, electricity, or chemical affinity.

"Prof. Jevons has been investigating this subject, with the following results: He used the purest quartz crystals, finely powdered; these seemed to be among the most active. He was, after a few experiments, struck by the fact that the purest distilled water gave the movements in the largest degree. All acids, alkalies, or salts, with a very few exceptions, tend to diminish the movement in a manner independent of their peculiar chemical qualities.

"This microscopic movement is closely connected with the suspension of fine powders in water. Clay and fine glass, which are most active under the microscope, are also capable of remaining for a long time in suspension. All acids, alkalies, or salts, which check the motion, also have the power of precipitating the solution; at the same time gum, which has a most extraordinary power of exciting the movement, is also capable of maintaining powder in solution.

"The author of the paper is of opinion that the motion is due to electricity, from the close analogy with the circumstances in which electricity is produced by the hydro-electric machine. Armstrong and Faraday found that pure water in the machine produced much electricity, and that almost any salt, acid, or alkali, prevented the action, rendering the water a conductor. Ammonia is, however, a remarkable exception, because it does not render the water a good conductor. The author found that ammonia did not stop the microscopic movement, and did not precipitate suspended matter.

"Acetic acid is the only exception. Boracic acid, which was also found by Faraday to be a non-conductor, was found by Mr. Jevons not to precipitate finely-suspended matter.

"Mr. Jevons endeavors also to explain, or, at any rate, to closely connect, the phenomena of osmose with this electrical condition thus: He says, 'If a liquid is capable of impelling a particle in a given direction, the particle, if fixed, is capable of impelling liquid in an opposite direction by an equal force. The earthenware jars used by Graham in many of his experiments were composed of a substance highly active under the microscope; and the fact that osmose is most shown in very diluted solutions, is entirely in accordance with the electric origin of the phenomenon.'"

Preserving Organic Specimens.—Dr. J. G. Hunt exhibited to the Microscopical Section of the Academy of Natural Sciences of Philadelphia (*Proceedings*) "certain vegetable specimens mounted in carbolic acid solutions, which had kept remarkably well, and expressed his preference for these solutions in preserving vegetable tissues.

"Dr. Tyson stated that in the preservation of animal tissues he had found carbolic acid the most satisfactory medium, usually in the proportion of 1 part to 50, with the addition of glycerin sufficient to bring up the sp. gr. to 1028, about that of the fluid by which tissues are bathed in health. For tube casts, a proportion of about 1 to 100 was sufficient, and care must be taken not to add too great a bulk at the beginning, lest the albumen of albuminous urine be thrown down, and the specimen be thus ruined.

"Dr. Wood thought that the impression held by some, that creasote possessed preservative properties 6 or 7 times as great as those of carbolic acid, lay in the fact that much of the creasote of the shops is really impure carbolic acid, containing a certain proportion of *cresylic acid*, which may possess much greater preservative property.

"Dr. Lewis desired to know the experience of members with acetate of alumina.

"Drs. Wood and Hunt both found a precipitation of the salt to take place in the preparations mounted in it.

"Dr. Hunt said that for preserving entomological specimens, solutions of chloride of zinc were better even than carbolic acid, and also said that successful preservation of delicate specimens, of animal or vegetable nature, was at best relative, and that even the most successfully-preserved tissues soon exhibited changes which distinguished them from fresh specimens, though they might little impair their beauty or utility.

"Mr. Walmsly referred to some remarks he had some time ago made, with regard to the preservative properties of glycerin jelly, which he still found useful, but not so generally so as carbolic acid solution, on account of its transparency."

"*India-rubber Cement.*—Dissolve one pound of pure india-rubber, divided into small fragments, in four gallons of rectified coal tar naphtha, with frequent stirring. After ten or twelve days double the quantity by weight of this liquid is added of shellac. This mixture is heated in an iron vessel having a discharge pipe at the bottom, and when the whole has become liquid, it is drawn out upon slabs where it cools in the form of plates. When required for use, it is heated in an iron vessel

to a temperature of 248 degrees, and applied with a brush to the surfaces to be joined. It is so strong that wooden beams and posts joined with it will break elsewhere before being divided at the place of splicing."—(*Jour. of Applied Chemistry.*)

—

Water-proof Substances. (*Revue Hebdomadaire de Chimie* and *Chem. News.*) "M. Ch. Toppan.—This contrivance consists, essentially, in the employment of a solution of pure paraffin in naphtha—that is to say, light petroleum oil—and to steep the objects required to be waterproof in this solution."

—

Lelanche Battery.—Respecting this, R. J. Fowler writes from Paris to the *Druggists' Circular:* "These batteries have been known here for at least three years, and are used for telegraphic batteries and for working the electric bells used in hotels, offices, and manufactories. They can be employed wherever a *constant* battery is required. A peculiarity in this battery is that only *one* liquid is used in its construction. It consists of an outer jar containing a concentrated solution of sal-ammoniac, and a sheet or rod of amalgamated zinc; the solution should only half fill the jar, and in it should be placed a porous jar containing bruised peroxide of manganese, in which is immersed a rod of good gas carbon. The porous jar should be sealed over, as the contents need never be disturbed.

"One of these cells can be left thus charged for twelve months, if not in action. Its wearing out depends entirely upon its size and how much it is used. Twenty-eight cells of the Lelanche battery are said to be equal to forty Daniell. The problem said to be solved by the Lelanche battery is this: To obtain a battery in which the chemical actions, being always in perfect equilibrium with the work done, shall give it necessarily a duration proportionate to this work, and without the least surveillance. To conclude, the cells for ordinary use cost, wholesale, three francs each here."

—

Electro-magnetic Regulator.—According to the *Med. and Surg. Reporter,* "Dr. G. M. Sternberg, U.S.A., has invented an application of electricity which promises to be useful. It is an electro-magnetic regulator for dampers and valves. It can be adapted to the automatic regulation of temperature, of steam pressure, of the height of liquid in a reservoir, etc."

—

Files Resharpened.—The *Scientific Journal* says: "A very interesting and economical process for resharpening files has been exhibited before the Société d'Encouragement, of Paris, by M. Werdermann. Well-worn files are first carefully cleaned by means of hot water and soda; they are then placed in connection with the positive pole of a battery in a bath composed of forty parts of sulphuric acid, eighty parts of nitric acid, and a thousand parts of water. The negative pole is formed of a copper spiral, surrounding the files but not touching them; the coil terminates in a wire which rises toward the surface. This arrangement is the result of practical experience. When the files have been ten minutes in the bath they are taken out, washed, and dried, when the whole of the hollows will be found to have been attacked in a very sensible

manner; but should the effect not be sufficient, they are replaced for the same period as before. Two operations are sometimes necessary, but rarely more. The files thus acted upon are, to all appearance, like new ones, and are said to be good for sixty hours' work. M. Werdermann employs twelve medium Bunsen elements for his batteries."

—

Silver Dead White Restored. Alexander Allan. (*Scientific American.*)—"The process for producing or restoring the dead white to silver is so simple that, when known, any workman of ordinary capacity can do it without difficulty in a few minutes.

"Before attempting it, however, the work must be carefully examined, to discover whether it has been previously repaired. Unskillful workmen—especially in the country—often resort to 'soft solder' unnecessarily. If any 'soft solder' (pewter) is found about the work, the process must not be attempted.

"If the article is all right in that respect, pound together 3 parts charcoal and 1 of nitre. Add sufficient water to form a paste. With a camel's-hair brush give the article a thin coat of the mixture, put it in a small annealing pan, and submit it to the fire until it becomes just red hot; then withdraw it from the fire, let it stand a minute, and turn it out into a weak solution of sulphuric acid (1 part acid, 10 parts water) in the boiling pan. Boil, pour off the acid, rinse; wash with warm water and soap, using a soft brush; dip in spirits of wine, and dry in boxwood sawdust. If any spot should still remain on the work, anneal it without the mixture, boil out and wash as before. Burnish the parts intended to be bright.

"Do not use the common American saltpetre. The English refined nitre, although it costs more, is really less expensive, as a smaller quantity goes farther, and does the work more effectually. Purchase of the wholesale druggist.

"Never neglect to dip your work in spirits of wine, and dry in boxwood sawdust. You cannot dry it properly by wiping; a moisture will remain and the gloss is lost; while by dipping in spirits, all jewelry and silver ornaments may be taken immediately, thoroughly dry, and retaining their full lustre."

—

Chrome Steel.—"Baur or chrome steel is not only one-third stronger than any other steel, but can be produced at small cost, from the fact that when worn out, as in a steel-headed rail, it has a market value, as it can be made over again, which is not the case with Bessemer or any other cast steel. It will also weld without borax or flux, and when burnt can be redeemed on the next heat."—(*Sci. Amer.*)

—

"*Manganese and its Alloys.*—Manganese, we fear, will never be a cheap metal, and alone would seem to be susceptible of no useful application; but we learn from the researches of M. Valenciennes that it forms very beautiful and useful alloys with copper. One in particular, containing only 15 per cent. of manganese, is almost white, and in many of its properties greatly resembles steel. Other compounds form, we are told, superb bronzes. How far these may be capable of replacing our ordinary bronze it would be premature to

speculate in the present undeveloped state of the industry of manganese. The same metallurgist we have mentioned above has procured pure cobalt, which seems to be a metal that may some day be usefully applied."—(*Mechanics' Magazine* and *Amer. Artisan.*)

—

"*Soldering Aluminium.*—If soft solder is fused with one-half, one-fourth, or one-eighth of its weight of zinc amalgam (to be made by dissolving zinc in mercury), a more or less hard and easily-fusible solder is obtained, which may be used in soldering aluminium to itself or to other metals."—(*Druggists' Circular.*)

—

"*Frosting Glass.*—A common preparation for frosting glass to prevent the too direct action of the solar heat in greenhouses, etc., is a wash of whiting and glue-water. It must not contain too much glue, as it is desired to wash it off late in the season by the action of rain, to compensate for the decrease in temperature."—(*Ibid.*)

—

Dissolved Gum Shellac.—"Everybody who has ever to deal with bleached gum shellac knows the difficulties and the loss of time attending its solution. To obviate this, the gum is broken into small pieces and macerated in a stoppered bottle with ether; after swelling up sufficiently, the excess of ether is poured off, when it will dissolve quite readily in alcohol."—(*Ibid.*)

—

"*Artificial Ivory.*—Tables for photography are made by mingling finely pulverized sulphate of baryta or heavy spar with gelatin or albumen, compressing the product into sheets, and drying it."—(*Ibid.*)

—

Sulphur modified by Sunlight.—M. Lallemand finds (*Scientific Journal*) "that the direct action of sunlight converts crystalline sulphur into sulphur insoluble in sulphide of carbon. By placing a solution of sulphur in sunlight concentrated by a lens, the author states that the sulphur is rendered insoluble and deposited in the amorphous form."

—

"*Cement for Aquaria.*—A correspondent, who has made hundreds of aquaria, and who has experimented with numerous cements for the purpose, writes us that the following is much better than the one for which we gave a recipe in our last number:

Take 10 parts by measure of litharge,
10 " " " " plaster of Paris,
10 " " " " dry white sand,
1 " " " " finely powdered rosin,

and mix them, *when wanted for use*, into a pretty stiff putty with boiled linseed oil. This will stick to wood, stone, metal, or glass, and hardens under water. It is also good for marine aquaria, as it resists the action of salt water. It is better not to use the tank until three days after it has been made."—(*Boston Jour. of Chemistry.*)

THE

DENTAL COSMOS.

NEW SERIES.

VOL. XII. PHILADELPHIA, JULY, 1870. No. 7.

ORIGINAL COMMUNICATIONS.

PERIDENTITIS.

BY W. A. BRONSON, M.D., NEW YORK, N. Y.

THE following paper, read before the First District Dental Society of New York, is offered to the DENTAL COSMOS for publication by vote of the Society. It is offered without pretense of originality, or as containing anything not already well known to the profession; but as no two minds view or state the same facts in the same light or language, so this restatement of old truths, it is hoped, may not be without profit.

We have used the term "peridentitis," instead of "periodontitis," because it is simple, logical, definite, and easily pronounced. "Periodontitis" is a constant stone of stumbling, perverted a hundred times in spelling and pronunciation to once it is used correctly.

We have not hesitated to incorporate methods, expedients, and remedies, with the same liberality and freedom as they have been communicated, because "free trade" in ideas has been the nutriment upon which dentistry has thriven with such wonderful vigor in the past few years; and "may its shadow never be less."

What is the dental periosteum? During the early months of fœtal life, commencing about the seventh week, there appear in the base of the primitive dental groove, and beneath the mucous membrane, a succession of papillæ. These papillæ are homogeneous bodies, translucent in appearance, not invested by distinct individual sac walls, and contain a congeries of granules, or nuclei, which are to be developed into blood-vessels and nerves. These bodies are the germs, and are to be pulps, of the future teeth.

As the papillæ enlarge and project from the base of the groove, they carry before them the elastic mucous membrane, which contracts around them, and forms their first investing membrane, or sac wall. This period of enlargement or growth continues till near the fourth month.

Corresponding with the growth and advance of the papillæ, the walls

of the dental groove also enlarge and deepen, and, by the growth of septæ between the papillæ, form distinct follicles around them, these follicles being lined by the reflected mucous membrane, and are the future alveoli.

About the fourth month, the margins of the follicles form projecting lids or operculæ over the papillæ, and by their union the primitive groove is obliterated, and the papillæ enveloped in a second and closed sac.

The union of these two mucous surfaces seems to be anomalous. It is the well-known characteristic of mucous and serous membranes, and essential in the structure of animal organization, that no simple contact, however long continued, should result in union, so long as the parts are in a normal condition; but the obliteration of the primitive dental groove seems to be an exception.

The next stage of development is the calcification of the crown of the tooth. This commences, as its base, from the first sheath of membrane in which the papillæ become invested; the dentine being deposited or calcified on the internal wall or surface, looking toward the pulp, which gradually retires before it, and the enamel on the external surface. This membrane continues its existence between the enamel and dentine, with more or less distinctness, after the formation of the tooth is perfected, and is the locality of greatest sensation in cases of fracture or decay.

The dentine and cementum of the root have the same order and source of growth as the crown.

The next step to be noticed is the eruption of the crown of the tooth through the gums, caused by the growth and elongation of the roots. As the tooth projects, the gum recedes along the surface of the crown, till it meets again the primary membranous sheath of the papillæ at the neck of the tooth, where they unite, forming the *ligamentum dentium.*

As the formation and development of the permanent teeth follow the same order and method as the deciduous, it is not necessary for my present purpose to notice them.

I have made this brief statement of the process of development of the tooth and its surroundings, that we may understand more clearly the character of the tissue which is the seat of peridentitis.

If the statement is correct, it clearly follows that the periosteum of the root and alveolus is the common mucous membrane in its second reflection, as it forms the second investing sheath of the tooth germ. This demonstration gives but one membrane, common to the tooth root and the alveolus, instead of a distinct membrane to each.

The function of the membrane is to supply nervous and circulatory power to the cementum and the alveolus, the vessels from it entering and ramifying in the osseous tissue of each. It also follows that, from

simple continuity of substance, the peridentium would sympathize with and partake of the long list of affections, both local and general, which irritate or disturb the common mucous membrane.

The careful study of these wonderful formative processes, and the not less wonderful structures which result, should lead every man to a higher appreciation of his work, and should teach him to handle almost with reverence the beautiful and delicate organs which are intrusted to his care.

What is peridentitis? The ready answer is, inflammation of the dental periosteum. We have endeavored to show what the periosteum of the tooth and alveolus is—now, what is inflammation? No single term defines it; it is rather a series of pathological conditions, following each other in regular order, each series indicated by different symptoms, and requiring different treatment.

The first stage or deviation from a normal condition, is the action of an irritating cause, disturbing the healthy function of an organ or tissue, and inviting an increased determination of blood to the part. Referred to a tooth, the first symptoms of the irritative stage are a slight feeling of uneasiness or discomfort, not amounting to pain; rather a continued but undefined consciousness of the presence of wrong, but oftentimes not sufficiently definite to localize it.

This is soon followed by a sense of fullness and stiffness, elongation, and mental gratification in closing the jaws firmly upon the intruder; actual and severe pain. These indicate stasis and congestion.

Up to this point, what is to be done? For the *intelligent* treatment of any pathological condition, certain things are essential. Among these are to be classed a knowledge of anatomical structure and relations; organic structure and functions; the office of the circulatory system, the nervous system, digestion, nutrition—indeed, the boundaries of desirable knowledge are illimitable. It is at this point that we, as a profession, make a great and injurious mistake—injurious to ourselves and our patients, in that we are too ready to accept and apply remedies without understanding pathological conditions, or the properties or appropriateness of the means of relief. The acquisition of such knowledge is a slow growth; mistakes and failures follow thickly in the paths of all of us, and it is often easier to extract the roots that annoy us than to extract from them the knowledge necessary to save them.

If we can gain any insight into what is actually taking place in the first stage of inflammation, it will give us a much clearer vision in selecting and applying our methods of treatment. Accepting, then, the best definition in brief we have of inflammation—viz., "perverted nutrition"—we have the condition separated into two elements, which stand out with distinctness, and are easily understood.

It is not strictly true that inflammation and perverted nutrition are

correlative terms. The shade of meaning which the mind receives from the word inflammation has the elements of fullness, heat, and tonicity, as distinguished from atrophy, paleness, or feebleness. They have the same relation to each other as periostitis and periodontitis, the one including the other. Perverted nutrition is inflammation, but it may be something more, and very different.

Let us see how we can make a practical use of this definition. Nutrition is the assimilation to their own nature, by living tissues, of those elements necessary for their growth or reparation. We have the blood, as the agent of nutrition, conveying to each part its allotment of pabulum, in quantity and kind; and, having done this, returning for a new supply and reoxygenation. The transmission of the blood from the arteries to the veins is accomplished by a network or mesh of vessels—the capillaries; and all the symptoms indicate that it is in the failure of these vessels to perform their proper functions that the disturbance arises. The cause, whatever it may be, irritating or weakening their exceedingly delicate structure, hinders at first and then stops the transmission of the blood, and we have the first result, viz., the irritative stage of inflammation. At this point, also, there occurs another vital function, which participates in the general disturbance, viz., the appropriation or taking up by the tissues of the elements of nutrition. It is always to be remembered, that we have here to deal with vital processes, and elements in their extreme divisibility, and ultimate changes; processes of which only the revelations of the microscope enable us to have an intelligent conception.

It matters not in what organ, tissue, or structure it may be; wherever there is circulation and nutrition, there is the possibility of perversion; and the perversion may not be in the quality of the pabulum, but in the failure of the part to appropriate it, or of the capillaries to transmit it, or the veins to return it. This statement looks to one obvious mode of treatment—viz., starvation, or the diminishing and diverting the supply of blood.

The application of this principle in practice leads to the following methods and prescription. But first it should be premised, that by far the larger number of cases of peridentitis have their origin in local causes, and of all local causes none are more prolific in this direction than the presence in the pulp cavity and root canal of the dead and decomposing pulp. But whatever the cause, whether internal or external, its removal should be the first thing sought. Secure perfect cleanliness, and it is oftentimes surprising how quickly and favorably nature will respond to this simple relief from a burden too great to be borne; and it is utterly vain to expect to check peridentitis while leaving its exciting cause in active operation

In the first place, then, cleanse the parts carefully, but thoroughly.

Secure also, if possible, a thorough evacuation of the alimentary canal.

The next local relief is to save the tooth from irritation by occlusion with its opposite. This is done by fitting a cap of pattern gutta-percha over one or more of the other teeth, so as to prevent their perfect closure.

Withdraw the volume of blood from the head, diverting it to the extremities by the use of the hot bath, or dry heat. Apply cold persistently and thoroughly upon the gums over the tooth, and for this purpose a rubber cot containing ice is a simple and efficient method.

Restrict the patient to simple water, and continue the regimen until time has been given for healthy action to be restored.

Now, it is very easy to write this prescription, and if it could be faithfully enforced in the first stage of peridentitis, it would rarely fail of success. But the cases are rare in which such control can be had of a patient. A great variety of circumstances interfere, and often the very surroundings of the patient make it impracticable.

What is the next best course? In all cases the exciting cause, so far as it can be detected, is to be removed. The indications are to allay the irritability which invites the determination of the blood, prevent congestion, and restore the healthy circulation.

Among the most efficient of these is local anæsthesia by means of the spray. Direct the spray upon the gum above and around the tooth so as to produce a decided effect, but not so as to interfere with its continuance for a sufficient length of time to accomplish the desired end. The action of the spray is nearly if not purely mechanical, abstracting the heat of the parts by its rapid evaporation, and is really only a very neat and efficient method of obtaining the effect of cold. The efficacy of a remedy of this nature lies in its being continued so long and so persistently, without any "let up," that the circulatory vessels shall have time to brace themselves up to their proper work. The hinderance to the use of the spray is in the imperfection of the apparatus for applying it. We have seen none yet which worked with sufficient facility to recommend them for general use.

An approximate effect to the spray may be obtained by some other articles of a highly volatile nature, simply applied to the gums and suffered to evaporate rapidly.

The next most efficient remedy, and efficient by virtue of its inherent properties, is aconite,—the tincture of the root. It is one of the most powerful narcotics we have, whether used as a topical application, or systemically. By the use of aconite we accomplish similar results as are obtained from the spray, but by an entirely different class of properties. It diminishes the sensibility of the nervous system by its narcotic powers, and also acts both upon the circulatory and respiratory

systems. In a great multitude of cases it is, perhaps, one of the most valuable remedies we have, but is not a remedy for indiscriminate use; 5 drops being a full dose for an adult, and 2 or 3 drops if applied to a scarified surface. If aconite fails, I do not know of any other of this class of remedies worth trying.

Another method of using aconite, and which accomplishes the very best results, is by the hypodermic syringe. But the introduction of aconite, as well as of morphine, into the circulation so near the brain, cannot be done with too much caution; not exceeding a drop in one case, or the thirty-second of a grain in the other.

There remains another class of remedies in counter-irritants, by which we hope to divert the determination of blood from the peridental region. Among these I would rank iodine, esteemed by many as a most valuable agent. Iodine, however, represents other and more powerful properties as an adenagic, and, indirectly perhaps, astringent.

Cantharidal collodion is a more distinctive counter-irritant, and, for this purpose, seems to combine the virtues of the class.

A most valuable remedy is a combination of iodine and aconite, equal parts of the tinctures, and applied by drying the gum and then penciling it with the mixture.

Still another set of agents have a deserved place in the treatment of peridentitis, viz., sedatives, represented by the various preparations of opium, and more distinctively by lead-water.

In daily practice we do not so often see peridentitis until it has passed the first or irritative stage and reached the congestive, and the patient is compelled to seek relief from the increasing pain.

We now have great sensibility to the touch, elongation of the tooth, swollen gums, tenderness on pressure, with oftentimes a defined tumor. What now shall we do? It is in this stage that the dentist often finds it exceedingly difficult, sometimes impossible, to do what his knowledge and judgment prompt. The patient is nervous, irritable, and sore,—so is the tooth and the mouth,—and he is worthy to be a dentist who can maintain his own steadfastness, equanimity, and patience to the end. The congestion must be relieved, but it cannot now be done by astringents. Cold and contraction now are simply intolerable; vent must be given forward and outward. It is at this stage that I prefer the use of the leech, because it can be applied with so little pain to the patient, and, if it draws well, is so efficient.

I have seen quite a number of cases terminate in resolution at this stage after its use. It is proper—rather, it is very well—to follow the use of the leech by the application sometimes of aconite, sometimes of arnica, wine of opium, or calendula, as the case may indicate.

But a leech is not always at hand, and one expedient should never exhaust the resources of a dentist. The true indication unquestionably

is, to make a free opening through the alveolus to the root of the tooth, relieving the blood-vessels of the confined peridental membrane, and following this by remedies already suggested. Few patients will submit to the pain of an incision, and prefer the risk of suppuration and abscess, in which it is quite certain to terminate. In this field many dentists will feel quite at home, and fully competent for the management of the case. Almost every one can cure alveolar abscess,—there is, ordinarily, no urgency in the symptoms requiring prompt and ready use of means to meet emergencies; there is time for deliberation and trial of different expedients without special discomfort on the part of the patient. I do not propose to say anything about alveolar abscess, because, although it is a logical result, or more professionally, a direct pathological condition following peridentitis, it has not its acute character, and is hardly embraced in the scope of my subject.

Peridentitis is a frequent result from operations upon teeth or roots in which the pulps have for a length of time been devitalized, and perhaps removed, and have gradually taken on a chronic pathological condition which is easily disturbed and kindled into an acute paroxysm. A familiar illustration of this class of cases is found in the preparation of roots for pivots, in the refilling of devitalized teeth, and in the opening for the first time of the pulp chamber, in which the dead pulp may have remained dormant for years. We are often perplexed to account for such a result following a very careful manipulation. But, after all, I think we need not go far for a sufficient reason.

It may be stated with truth that, by the death of the pulp, the positive life of the tooth is taken away, and the whole duty of sustenance and reparation is laid upon the peridental membrane. To such a degree is it common to regard the vitality of the tooth as depending on the pulp, that we have been in the habit of calling teeth with dead pulps, "dead teeth." And there is a large grain of truth in the term; for, with the death of the pulp, the great organizing, vital, spirit force of the organ is gone.

The peridental membrane may gradually develop and assume these imposed duties without dissent, and the vital functions may go on without disorder. But a rude derangement of this almost enforced harmony is very likely to produce a painful discord. The low vitality of the tooth is not equal to the duty of sustaining and recovering it from a derangement of the action which has been set up. The cutting off of the ends of the dental tubuli toward the nerve canal may open a way for the escape of the vital force. The admission of unaccustomed air and moisture may disturb the circulation. Again, the too early closing up of these tubuli, when a free vent had become established, is quite certain to terminate in irritation and congestion.

Another class of cases is, when peridentitis is developed without local injury.

A devitalized tooth, and it may be a well-filled one, which has been quiet for years, will suddenly take on the exasperation and fury of acute inflammation. The cause in these cases is probably to be looked for outside of local irritations. It may, probably, with truth be said that, in a condition of perfect health, peridentitis is not possible. We will go further, and say that, in a condition of perfect health, the pulp of a tooth would never become devitalized, or the tooth itself decayed. But perfect health is an anomaly, and we must accept the conditions as they present themselves.

We have used the term "perverted nutrition," as defining inflammation, and in these cases the perversion lies farther back than the tooth itself, or the peridental membrane. The whole function of digestion may be at fault, and a weak and half-dead tooth is quite likely to feel the first assault of disease, or irregularity in the system.

The only tangible local cause in these cases is the one already suggested, viz., *low vitality*. We know how readily the system, when weak and poorly nourished, yields to attacks of disease which it would easily throw off, or resist successfully in its full strength and vigor. What is true of the whole is relatively true of the parts.

If this view of at least one source of trouble in these cases is correct, it has this importance,—the necessity of extreme care and delicacy in all operations upon pulpless teeth. It is true that with the greatest care we may sometimes have the worst results. But in the very nature of the case, it is not always possible to foresee this, and we can only do with our highest skill what our best judgment dictates.

Failures oftentimes teach us more than successes; certainly we are more likely to remember the lesson. During the time in which this paper was written, a case occurred which illustrates how a good theory may be counteracted by small errors in practice. It was desired to refill a central incisor in which the pulp had been devitalized more than twenty-five years previously, and the root imperfectly filled. The tooth was excavated with care and thoroughness to the apex of the root, which was easily reached, and the cavity was then bathed with carbolic acid, and lightly stopped with bibulous paper. The patient was requested to report immediately if any trouble threatened, and an appointment made for the second day following, for filling. The patient came at the appointed time, but had had a slight pain and soreness since the first day; still not enough to lead her to seek relief. The symptoms were now becoming more aggravated. The spray was applied for more than two hours continuously, and at this time the application of cold was not only tolerable, but grateful. The patient went home with directions to continue cold applications to the gums, heat to the extremities, and cold water diet. The directions were faithfully kept. On the following day there was no mitigation of the symptoms. A leech was

now applied, and drew freely, and the bleeding continued for an hour and a quarter after it was taken off, and until the patient fainted. Over ten ounces of blood were lost. The day following, the face was immensely swollen, and the case terminated in abscess, which discharged profusely, was healed readily, and the tooth was filled successfully. Now, what were the mistakes ?

In the first place, the patient, on going home the first day, lay down and slept under an open window, not knowing it was open, as it was covered by a shade. (This information was not given till some time afterward.) Sleeping in a draught of air is not a good prophylactic.

In the next place, the use of carbolic acid or creasote in a freshly-excavated cavity of this character is of questionable utility,—on account of what properties we are not prepared to say, but it has been a comparatively unsuccessful agent. We much prefer simple water. The best preparations we have ever found for the first treatment are phénol sodique, and still better, Labarraque's solution, using them freely.

Again, and chiefly, it was too late when the spray was applied; the congestion had gone too far.

Since the date of the above case, we have excavated a great number of less promising ones, without a single instance of peridentitis.

The indications of inflammation are usually manifested within from six to forty-eight hours after excavation. Every patient should be fully warned of what may follow, and instructed to seek immediate relief. Every dentist will gain largely in the confidence and good-will of his patients, if, before commencing any case, he make a clear statement of the possibilities. The patient will then know, if trouble does come, that he has not been blindly led into it, and will feel that security in our hands which is so flattering to all of us.

CASE OF FISTULOUS OPENING IN THE CHIN FROM NECROSED TEETH.

BY G. W. MATTISON, M.D., MIDDLEVILLE, MICH.

Mrs. M., aged thirty, called at my office, July 17th, 1867, for the purpose of having some teeth extracted preparatory to having an artificial upper set. She was a stranger to me, introduced by a female friend; and I noticed at once that she had a peculiarly elongated outgrowth upon her chin, which looked very much like the small end of an old-fashioned white clay smoking-pipe, and about three-eighths of an inch long. During the operation of extracting her teeth, I accidentally let my hand fall upon her chin, when I discovered that it was very sensitive to the touch; she said her chin was a great trouble to her. On inquiring what was the occasion of its being so sensitive, she said she supposed

it was a cancer; that she had shown it to several of the physicians in this and adjoining counties, and they had all told her it was a cancer, and that she had best not have anything done for it, lest it might get much worse and perhaps shorten her life; which counsel kept her in constant fear of accident, a lifetime of suffering, and perhaps an early death.

It had then been growing about two years, and as it did not give her much trouble except from its extreme sensitiveness, and the mental depression consequent upon the certainty of its malignant character and ultimate fatal termination, she had thought best not to resort to medicine or surgery until it was positively necessary (or as we might rather say, unnecessary or of no use). On a more careful examination of the supposed cancer, I found that it discharged a thin sanious fluid at its apex, which she said it always had done. The front under teeth to all outward appearance were perfectly sound; but on being questioned as to their former history, she said some years ago they had been somewhat painful and sore at the roots. I proposed to remove the two central incisors, at the same time suggesting that perhaps the cancer would soon disappear; to which she said, if I thought there was any probability of her being benefited by the operation, by all means to take them out. I said to her that there was nothing alarming about the cancer, but the removal of the teeth was necessary to the healing of the fistula. I extracted the two teeth, both of which were black and necrosed about one-fourth of an inch at the apex of the fangs. I then directed her to moisten the pipe (for such it was) with a little water three times a day, and then apply to it while wet a coating of acetate of lead pulverized, which I gave her, and in about four weeks the *cancer* was entirely well, leaving no deformity, except the loss of the two central incisors, which was soon supplied by the closing together of the two laterals, which leaves her teeth in better shape as to regularity than they were before; having been very much crowded and somewhat protruding in their appearance.

AMAUROSIS CURED BY TREATMENT OF MOUTH AND TEETH.

BY J. T. ABBOTT, MANCHESTER, IOWA.

Mr. A. B., aged 21, had been troubled with partial loss of sight of one eye for several months, and for a few weeks previous to calling on me the eye grew worse, until he could not distinguish an object with the affected eye twenty feet distant. There had been no pain in the eye from the commencement of the loss of vision. The pupil was much enlarged. An examination of the mouth found most of the superior teeth affected with caries; and believing this to be the cause of the

amaurosis, I extracted several old roots and three molars, badly decayed. The two centrals and two laterals I filled with gold in each approximal surface; also the two cuspids in the mesial surfaces. The walls of several of the cavities were so broken away that I made contour fillings. The cavities generally extended from near the cutting edge of the tooth to the neck, and some of them above or beyond the enamel. I commenced the filling about two weeks subsequent to the extraction. During the time, or prior to filling, the gums were treated. They presented a turgid, flabby appearance, but yielded readily to the usual remedies. There was almost an entire absence of sensitiveness in the cavities during the excavating and preparing for filling. I have been particular in stating the general condition of the mouth and the plans of treatment, for I considered this one of the clearest cases of amaurosis dependent upon irritation of the fifth pair of nerves, inducing sympathetic action of the optic nerve. I should have stated that the roots and teeth extracted were somewhat *exostosed*. The sight was gradually restored, and in a few weeks was apparently as good as ever. The day after the extracting was performed the sight began to improve.

I have met with several cases when like treatment produced like results, but none so positively marked as the above. One case where the patient had been treated by a very skillful physician for amaurosis, but he failed to receive any benefit. Upon examining the mouth, I found both superior wisdom teeth much decayed, although they had never given any trouble; but the extraction of those teeth was followed by the restoration of sight to the eye. I think, perhaps, physicians may, in forming a diagnosis in such cases, sometimes overlook the true cause in their search for some more deep and complicated structural changes, and charge it upon the optic nerve and brain. I am well aware that the exciting cause is not always so easily arrived at; but in all cases of like affections of the eye, the mouth should receive first and careful attention.

CRACKING OF VULCANITE PLATES.

BY F. W. COE, VERGENNES, VT.

Dentists are annoyed more or less by the *cracking* of vulcanite plates, between the central incisors of the upper jaw, after being worn for a time; especially when the lower jaw contains but a few natural teeth, and those very irregular, and not antagonizing perfectly with the artificial ones.

To obviate this trouble in a degree, I imbed in the rubber, on the lingual side of the incisors, a piece of platina wire about one and a half inches long, with an eye or hook bent on each end. Pack a small amount of rubber inside, and under the pins of the incisors and cuspi-

dates; then bend the wire with eye at ends in shape, so that it will lie close to the teeth, extending from the centre each way toward the cuspis; pack over it as usual, and vulcanize. When the work is finished, the wire will not be visible. This wire strengthens the plate at that point, preventing it from cracking and springing apart. I do not know that this is new to the profession, yet I have never seen anything of the kind, and think it is not generally practiced. I give it as my experience, knowing that it will well repay a trial.*

PROCEEDINGS OF DENTAL SOCIETIES.

ODONTOGRAPHIC SOCIETY OF PENNSYLVANIA.

The last discussional meeting of the season, prior to the summer intermission of July and August, was held at the Philadelphia Dental College building, No. 108 North Tenth Street, on Wednesday evening, June 1st, 1870.

There were present several prominent practitioners of this specialty of the healing art, a number of the members of the society, and some of the students of the college.

The President, Prof. McQuillen, called the meeting to order, and introduced, in a few appropriate remarks, the well-known Prof. Robert Arthur, of Baltimore, Md., who had been invited to lecture before the society upon "The Prophylactic Treatment of Caries of the Teeth."

The lecturer prefaced his remarks by saying that he had spent some years in silence, but during that time had been working diligently for the better solution of problems in which we were all interested. Great losses of teeth occur, notwithstanding the ten thousand dentists in this country. The three or four millions of artificial teeth manufactured and sold annually, indicated but a fraction of the whole. He would not deny that the profession has advanced; but such a record shows how far, as a profession, it falls short of the great object for which it is laboring. We have relied principally upon the operation of filling; his attention had been turned in another direction, and his views brought before the profession in a little book published some four years ago. He had been under the impression that it was impossible to misunderstand the views stated in the book referred to. He does not urge the filing indiscriminately of all the teeth, as some have supposed. That he considered

*We publish the above for the benefit of some who may not have tried the plan described, although under the impression that it is well known to the profession generally. J. H. McQ.

the method of treatment he proposed to explain of importance, his presence there, at no little inconvenience to himself, sufficiently indicated.

He would at once proceed with his subject. The field with regard to caries was a large one. He had but little time to devote to any discussion of points in dispute with regard to the intimate structure of the teeth, or the theory of dental caries. There are certain points, however, about which there are no differences of opinion. All admit that the dentine is filled with tubuli, proceeding from the pulp, containing fibrillæ. He instanced, in this connection, Mr. Tomes as very reliable authority, and had verified this observer's discoveries himself. All were aware that physical changes occur under certain circumstances in the dentine, and that there are other evidences that it is endowed with vitality. All agree that the hard parts of the teeth are composed principally of phosphate of lime, and are liable to decomposition, whatever the agent may be. It does not attack all parts indiscriminately. It occurs at points where food or fluids are retained for some length of time in contact with the teeth. It always commences externally, either on the surface of the enamel or at some point where it is defectively formed. It is a fallacy to suppose that the enamel prevents decay. On the proximate surfaces, where the enamel is fully formed, it is a matter of common observation that caries occurs. Mr. Tomes, twenty years ago, published a series of tables showing that out of 1719 teeth extracted, decay had occurred in 945 where the enamel was perfectly formed; and the remarkable disparity in the bicuspid teeth of caries occurring in but 27 instances on the masticating surfaces, and in 322 on proximate surfaces. We are aware that the remedy relied upon is filling the carious places,—gold being generally admitted to be the best material. The operation of filling is exceedingly simple, on the grinding surfaces, if taken early in the attack; when at all advanced on the proximate surfaces, it is very difficult.

In its best aspect it is not in all respects an entirely efficient method; on the contrary, we find that it fails in numerous instances. A gentleman present has just assured me that at least half his time is occupied in renewing fillings on the proximate surfaces, and although not excelled as an operator, he finds it necessary frequently to renew his own fillings, to arrest recurring caries.

Caries is more liable to occur on proximate surfaces where teeth are in close contact; seldom when this is not the case.

It has been proposed, and extensively practiced, to remove the first molar, to give room to the remaining teeth. This, if always followed by separation, would be a very desirable means of preventing caries.

But this does not always follow. He exhibited a diagram of a case in which the first molars had been extracted for this object, but when

the second molars moved forward, and came in contact with second bicuspids, all their teeth decayed on proximate surfaces.

He does not purpose to discuss this question now, but thinks they are often uselessly sacrificed, and sees no reason why such large and important teeth should not be saved. He proposed to ask if an artificial separation will not do as well. There is a strong prejudice among people and the profession against this, as many think that where the enamel is removed we have decay. There is no argument required to prove that the enamel does not protect the teeth from caries. It is composed of the same constituents as the dentine, and although more compact, is not endowed by nature with the vitality to resist the action of corrosive agents. The fact that caries occurs on the proximate surfaces is proof that it will not withstand the attacks of the solvent to which the teeth are exposed.

The fact is noticed by Mr. Owen, in the introduction to his "Odontography," p. 23. He states that, although the enamel is intended and adapted by nature to subserve certain mechanical uses, it is devoid of the power, with which vital tissues are endowed, of resisting the action of external decomposing forces.

Dr. H. H. Hayden, a man of thought, who stood at the head of his profession in his day (but not so fine an operator), was in the habit of filing extensively, and was very successful in arresting the decay. (Prof. A. exhibited a drawing of the teeth of a lady seventy-six years old, filed at twelve years of age.) He established the fact that it was a reliable practice.

It fell into disfavor, because of the imperfect manner in which his successors attempted to carry it out. At that time, it was almost impossible to obtain proper instruction, and many men assumed the responsibilities of the dental profession who were entirely incompetent.

If incipient caries is properly removed, the disease is not likely to recur. For twenty years he had followed out this matter, and for ten years thoroughly tested it.

The first step in his process of treatment is, as soon as the first permanent molar teeth make their appearance, to cut away the distal surfaces of the second temporary molar from contact with it. These teeth decay not only at the usual defective places in the enamel, but, very commonly, on the mesial surfaces, before the second temporary molars are shed. In the tables of Tomes, already referred to, it is shown that of 819 first molar teeth extracted, caries attacked the grinding surfaces at the defective points in the enamel in 401 instances, 263 on the mesial surfaces, 155 at places not known.

Dr. A. was aware that these teeth were frequently sacrificed. By many good men in the dental profession, it is not thought desirable to make any attempt to preserve them. He did not agree with these gen-

tlemen, but had not time to enter upon the subject. It is one, however, which should be more carefully examined than had yet been done. But it is conceded, by those who pursue the practice of extracting these teeth, for the benefit of those which remain, that it is not best to take them out until some time after they make their appearance. The simple operation proposed, therefore, for their preservation from caries, commencing on their mesial surfaces, cannot be objected to, even by these gentlemen, as the cutting away of a portion of the temporary teeth, even if the permanent molars should be perfectly sound, can do no harm, as they will soon be lost in the course of nature. Dr. A. urged this practice upon those who were disposed to question his views, and expressed his conviction that the mesial surfaces of the permanent molar teeth referred to would be found carious, on being separated from the adjacent temporary teeth, before one year had elapsed after their appearance.

The next teeth claiming attention are the permanent central incisors. Whatever may be considered the best practice with regard to the first permanent molars, there can be no difference of opinion about the importance of the preservation of these teeth. It is not necessary to say that they frequently decay at some point on the surfaces in contact soon after they are formed. If the temporary lateral incisors still remain, and are in contact with the teeth in question, they should be cut away, as was advised with regard to the first permanent molars. Steps should be taken to detect caries as soon as it occurs, and during the first year they should be examined carefully every few months, not merely with a mouth mirror, but by pressing them apart and examining all parts of the surfaces in question with a sharp instrument, to detect the slightest softening before there is any discoloration. When it is discovered that decay has commenced, they should be cut away at a bevel toward the lingual surfaces, so that they cannot again come in contact (as shown in diagram exhibited by Prof. Arthur). If this is done sufficiently early, it is necessary to cut away but one of the teeth to produce the requisite separation. Caries of the incisors may be effectually arrested in this manner.

Filling the incisor teeth, for the arrest of caries, can always be avoided if timely attention is given to them; and the time will come when it will be considered malpractice to permit them to decay so far as to require filling, provided a dentist has entire charge of the case.

The lateral incisor teeth require special attention. They are small, and if caries is allowed to progress to any considerable extent, the pulp is liable to become involved. The tables of Tomes furnish some data with regard to their relative liability to decay, as compared with the central incisors; ninety-two of the former were lost to fifty-three of the latter. They may be saved from an attack of caries without

any loss of substance. If the central incisor teeth are attacked by caries on the proximal surfaces within a year after they are formed, what reason is there to suppose that the lateral incisors will escape? They are identical in structure, in the same individual, and exposed to the action of the same destructive agencies. As soon, therefore, as they take their positions in contact with the central incisors, the distal surfaces of the latter should be cut away. The temporary canines are also cut away from contact with them.

To fill the bicuspids is much more difficult; it is, therefore, very important that decay should be detected at the very earliest period, or prevented from occurring. Decay occurs above the points of contact, according to his observation. We frequently find these teeth decayed, and the pulp exposed, before we suspect it diseased.

To preserve the 1st bicuspid, cut away the temporary teeth on both sides, thus saving it without filing. When the 2d bicuspid appears, he invariably cuts away the mesial surface of the permanent molar, and also the mesial surface of the second bicuspid.

Decay is so common, that of two hundred and thirty adults, thirty-seven only escaped caries on points of every one of the teeth that had come in contact, according to record referred to. Not ten per cent. of females escape caries at these points. The great stumbling-block in Prof. A.'s treatment has been the objection to filing sound teeth. But this is not the question. It is, rather, can a dentist determine, from a careful examination of the teeth and physical characteristics of a child twelve years of age, whether caries will attack all the teeth, and, if so, shall he wait until the attack has supervened, when it is in his power to prevent it? Is a physician culpable, if he vaccinates for the small-pox, when a healthy man is exposed to contagion? Must he await the attack? He has no hesitation in saying that if thirty-seven were doubtful out of two hundred and thirty, he should think the whole better served if the treatment were carried out unnecessarily, than if all the teeth were allowed to decay, until filling was required. He had stated that Dr. Hayden was successful. He then proposed to show a few of his own results, and exhibited a model of a case of a child for whom treatment was commenced at ten years of age. She is now sixteen, and there are no fillings on proximal surfaces. He has himself a family of seven children; one only has an incisor tooth filled; teeth very frail, and all were carious.

The lecturer presented diagrams of several cases in which his treatment had been successful, and referred to the cases of the children of two families, two in each case, in which the ordinary practice had been pursued for one child, and that which he advises for the other with striking advantages in favor of his system.

From one of his records he found that the removal of superficial

caries from 1233 places, and the separation to prevent caries, had resulted in but 36 failures. He doubted whether any operator could exhibit a better record as the result of filling on the proximal surfaces.

Attention was called to the calcification of the fibrillæ of the tubuli as the result of decay, first noticed by Mr. Tomes. An effort is made by nature for the arrest of caries. He had no doubt that it occurred in all cases where the enamel was removed by filing, and the dentine was left free from contact with contiguous teeth.

He explained the necessity of preventing the contact of surfaces once filed. If teeth changed position, they should be re-separated. He urged the importance of nice care in all the features of the practice advised. It would certainly prove a failure in the hands of careless operators. Although compelled to occupy a great deal of time, he regretted that he was necessarily so limited as to render his explanations imperfect.*

Prof. J. D. White said that, although many had practiced filing or cutting and polishing away carious portions of the teeth, no one had attempted to systematize it as Prof. Arthur had. This system was undoubtedly the best to which his attention had ever been called, and he did not hesitate to say he thought it would confer a benefit upon mankind.

He had often filed teeth himself, and reported successes, after twenty-five years' trial, in the mouths of patients of the late Dr. Roper, of this city.

Prof. Kingsbury stated that at this late hour it would not be proper, nor would it be expected of him, to enter into the merits of the subject of Prof. Arthur's lecture. He felt that the preservation of teeth by prophylactic treatment, or the prevention of caries by anticipatory treatment, as well as arrest in its incipient stage, could not fail to impress us all as points in our practice of vital importance. He had been much interested and gratified with the views so clearly presented by Prof. Arthur.

Perhaps he could not pronounce a higher opinion of his views and mode of practice, than by stating the simple fact, that since he procured a copy of his work, some years ago, he not only read it with much interest himself, but had been in the habit of placing it in the hands of his patients, especially those who had families of children,

* The above is a very inadequate sketch of Prof. Arthur's lecture. The whole subject, however, will soon be brought to the attention of the profession in another form, as we understand he proposes to publish a work upon it, which, judging from the manner in which his views were received by the members of the profession who were present, will greatly change the methods of operating on proximal surfaces of the teeth, if it does not revolutionize them altogether.

and who were affected by the popular prejudice in regard to filing or otherwise separating the teeth. In numerous cases he found that its careful perusal had a most salutary influence, and greatly modified their views in regard to the use of the file. For a long time he had regarded the proper use of the file and enamel chisels, for the separation of teeth affected with caries upon their proximal surfaces, as absolutely indispensable in the successful treatment of such cases.

That this mode of treatment requires care and judgment, must be apparent to every considerate person; and there can be no doubt but it is the improper and injudicious use of the file in times past, by incompetent persons, that has brought this valuable instrument into such bad repute, and invested it with such fearful terrors.

During the course of practice he had had the opportunity of examining many cases where the teeth had been filed for the purpose of removing the carious surfaces of teeth, and arresting the further progress of the disease; in many of these cases, where the operation had been performed some twenty to thirty years previous to the time of examination, he had found the teeth effectually preserved, and the filed surfaces beautifully polished by friction and perfectly sound.

Yet, with his own strong and honest convictions on this subject, he had found it one of the most difficult things in his profession to combat the deep-seated prejudice of a certain class of patients, and convince them of the great value of a proper separation of the teeth, for the arrest and prevention of proximal caries. As dentists we have much to do in educating our patients up to the proper point on this subject.

Prof. Jas. Truman expressed his gratification with the lecture. His mind involuntarily reverted to a period, seventeen years ago, when he sat an interested listener to the lectures then delivered by Prof. Arthur. The original research exhibited by these was then powerful for good, and he doubted not but the present would have a similar influence.

The subject was one of much interest, and has claimed his earnest attention for years. He was not prepared to carry the process to the length described by Prof. Arthur. Caries is almost immediately observed in the incisor teeth, and when observed, is readily and successfully treated by the ordinary process of filling, with or without filing. There can, however, be no question in regard to the value of the process of filing deciduous teeth, to prevent their contact with the proximal surfaces of these teeth.

As we proceed posteriorly in the arch, the condition of things changes materially. The bicuspids are almost certain to be affected by caries. The exceptions are so few that they need no consideration. Caries frequently begins beneath the free margin of the gum, some distance above the point of contact on proximal surfaces; but, where-

ever it commences, its ravages are principally confined to the interior. Unless, therefore, the operator is very careful, the destruction will have extended to the pulp before any remedial efforts are made. As this result is certain to follow, in the majority of these teeth, there can be no doubt but that here Prof. Arthur's method is founded on correct principles of practice. If we can save these teeth by filing them, early after their eruption, we are remiss in our duty if we do not attempt it.

The idea generally entertained that filed surfaces are more liable to decay, is without doubt a great error. The slight irritation, whether this is produced by the file, or the constant attrition of particles of food, produces the same result as we find on abraded surfaces. This is abundantly illustrated on the cutting and masticating surfaces of teeth, or in very slow caries. The irritation produces an extra development, and we have a secondary deposit of dentine, changing the soft inner tubular tissue into one of an osseous character, rendering the surface impenetrable to destroying influences. The truth of this has been demonstrated over and over again. All such surfaces, thoroughly polished, may be left without anxiety as to the final result. Properly freed from contact with other surfaces, they are no more liable to caries than when covered by enamel.

Dr. McManus, of Hartford, Conn., said it was with great pleasure he had listened to the remarks of Prof. A. He did not consider that he was alone in systematizing this practice, as an old practitioner in Hartford, Dr. Riggs, had been in the habit of operating in this way for a quarter of a century, although he had never carried it to the molar teeth, since he is an advocate for the extraction of the first permanent molars. The doctor regretted that the caution and modesty of these gentlemen had made them so slow to communicate their practice to the profession.

Dr. Head thought one of the present difficulties in carrying out the practice of Prof. Arthur was the impossibility of *purchasing* proper instruments for cutting the enamel; they should be prepared without polishing off the hard scale left by forging, and then left hard; or, if too brittle, the temper drawn by heating the shanks until a drop of water placed upon the points is evaporated, and then they should be plunged into cold water.

He called attention to the fact that molar teeth are sometimes broken down by accident and the inclined plane surfaces resulting when polished seldom decay; this he thought an argument in favor of the little danger of decay where the dentine is exposed and self-cleansing surfaces left.

Dr. Jack confessed that at the first he did not understand Prof. A., and believed with others that any mode of separating teeth for the purpose indicated must result in injury. It was not until he became ac-

quainted by personal explanation with the form of space to be used, that he began to follow the practice in this respect. His experience since, in this direction, corroborates the results of Prof. Arthur's.

Before deciding to separate the teeth, he said, we must be guided in our diagnosis by the appearance of predisposing causes of decay, and look for the evidences of the exciting causes; when these are existent, it will be found that we will hardly ever fail in discovering superficial decay of the enamel in nearly every case, when a separation is effected for an inspection. He would like to call attention to one fact from his experience, that where in opening between the central incisors he had found the surface of the enamel had commenced to soften in so slight a degree as to give up in the least some of its substance by scraping, or on which, when cleaned, dried, and examined carefully, a milkiness of the surface is presented; that, if we will examine the surface of the permanent front molar, which has been longest exposed on its mesial face, he had invariably found a deeper decomposition of the surface, and this, regardless of the age of the patient; sometimes at seven years, and again not until twelve years, will this appearance be presented. Here is the commencement of caries under the operation of general causes which no amount of care will prevent, but which may only be retarded. It is to meet such indications that Prof. Arthur effects the separations, and by which are produced self-cleansing surfaces.

Prof. McQuillen said he was pleased that the Odontographic Society could be instrumental in affording an opportunity for Prof. Arthur to correct the erroneous opinions entertained with regard to his views. Although not prepared at once to put in practice the method advocated, of filing certain teeth in anticipation of decay, he was free to admit that the reasons assigned had made a more favorable impression upon him than he had anticipated would be the case prior to the lecture.

It had been his practice for years to chisel out superficial caries on the approximal surfaces of the teeth, and to make the space between the teeth larger within the arch, in this way preserving the symmetry of the organs. Of the advantage to be derived from simply cutting out superficial decay and then polishing the surface of exposed dentine, he could present evidence in his own mouth of a central and lateral incisor thus treated twenty-three years ago by Prof. J. D. White.

Dr. Ellis, although long familiar with the operations of chiseling and filing the proximal surfaces of teeth for the purposes of arresting caries and preventing its recurrence, felt a peculiar and increased interest in the subject upon becoming acquainted, through his friends Drs. Jack and Head, with the systematic and philosophical method practiced and urged by Prof. Arthur.

The antipathy which so many patients manifest to the use of the file, arises mainly from the opprobrium which has attached to that instru-

ment, as the result of its injudicious and indiscriminate use; and the substitution of the chisel, although designed to effect separation, will generally provoke little or no opposition.

He understood Prof. Arthur, while maintaining its great importance in procuring space for the introduction of fillings, to specially present its advantages as a prophylactic measure, to be practiced only when dictated by close observation and sound judgment; in other words, to separate teeth where, from the defective dental structure and caries in other locations, the practitioner feels able to predict the speedy disintegration of the enamel, or entertains just suspicions that a solution of its substance is already inaugurated.

He thought it all-important, in separating the incisors, to open entirely the palatine face and carefully avoid removing the line of enamel upon the labio-proximal angles; by this precaution the rotundity of the tooth is not sacrificed, and the convex enamel surfaces offer the least opposing area for the lodgment and retention of foreign matters.

He wished to attest the importance of subsequent and thorough polishing, and could fully indorse, from six or eight months' trial, the value of the putty of tin for imparting a final finish.

He considered it important, in separating bicuspids and molars, to have the opening of a double V-shape, the apex of one formed by the necks of the teeth, and that of the other by the bucco-proximal angles. This, as suggested by Prof. Arthur, was best accomplished by directing the point of the bicuspid file toward the palate in the superior, and the floor of the mouth in the inferior jaw. He thought, however, in filling the lower teeth, that cavities could frequently be rendered more accessible by having the base of the opening present toward the cheek, the disfigurement, which would constitute an objection in the upper jaw, being here obscured by the integuments.

Owing to the lateness of the hour, the society then postponed the discussion until the next Wednesday evening, June 8th, 1870, and went into an election for delegates to the American Dental Association and State Dental Society, which resulted unanimously as follows:

Drs. Louis Jack, C. A. Kingsbury, C. E. Pike, Thos. C. Stellwagen, Wm. C. Head, J. H. McQuillen, Alonzo Boice, of Philadelphia; J. L. Suesserott, G. F. Platt, of Chambersburg, and John McCalla, of Lancaster.

Adjourned.

The society held an adjourned meeting at the usual place, on Wednesday evening, June 8th, 1870. In the absence of the President, Dr. M. Lukens Long was called to the chair.

Dr. E. H. Neall had received both pleasure and profit in listening to the lecture of Dr. Arthur on the subject of "Filing the Teeth as a Preventive of Decay."

From some little experience in the matter, he believed that the filing of the front teeth, as directed by Dr. Arthur, "entirely from the inner surface," either to remove superficial decay, or as a prophylactic remedy, to be highly beneficial; but had seen it fail frequently to arrest further decay in the bicuspids and molars, owing probably to the fact that these teeth are often so greatly constricted at the necks as to require a large portion of the dentine of the tooth to be removed.

He also exhibited a left superior wisdom tooth with large decay in the anterior proximal surface; this tooth, as well as the adjoining second molar, had been filed away six years before by a skillful dentist, at least one-third of each being removed; yet, in that time, the teeth had twisted so that they were in close contact, decay reaching the nerve in the second molar.

He thought it to be the duty of every conscientious dentist to impress upon the mind of his patient the necessity of keeping the proximal surfaces perfectly clean, using daily for this purpose not only the tooth-brush, but the quill-pick and silk thread.

Dr. Boice had at one time been opposed to filing between teeth, but since has favored the means advocated by Prof. Arthur. He thought the specimen just shown only proved that the operation had been either unadvisedly or imperfectly performed. He always filed with the double V, as described before, and thus makes self-cleansing surfaces. The systematic manner in which Prof. Arthur pursued this practice made it of increased value; only this very day Dr. Boice had found caries between teeth where there did not appear from superficial examination to be any; but upon forcing the teeth apart, he found it upon the necks, at the edge of the gum.

Prof. Kingsbury stated that he was present in order to evince the deep interest he felt in the subject before them. He regretted that circumstances beyond his control would make it necessary for him to leave in a short time, and what he had to say he would say briefly.

He had great confidence in the early separation of teeth as a means of *preventing* as well as of arresting caries of the proximal surfaces in its incipient stage. His mode of treatment had been similar to that advocated so clearly and earnestly by Prof. Arthur, in his lecture a week ago in this room. He would frankly confess, however, that he had not pursued the *systematic* treatment of Prof. Arthur, nor carried it to the same extent.

He was glad, for the sake of Prof. Arthur as well as the profession, that he had visited our city and given us such a full and satisfactory explanation of his views and practice touching this subject; for he was satisfied that many had misapprehended his views as gained from his published work. Prof. K. was glad to find that he did not advocate the indiscriminate separation of the teeth of all his young patients, but that

he was guided in the operation by certain pathological indications, affording the strongest evidence of the predisposition of the teeth to early decay. Certainly the old adage, "An ounce of prevention is better than a pound of cure," admits of no more forcible application to any subject than to this.

In addition to the prejudices of our patients, there are other difficulties that we cannot fail to encounter,—difficulties which must be removed before we can secure to our patients the full benefits of this prophylactic treatment. He had found that parents and guardians of children were often greatly to blame in postponing their visit to the dentist until disease had already made serious and fearful progress, and perhaps the first call has been to obtain relief from the excruciating pain caused by an exposed pulp. *Early* attention and thorough examination of the teeth are absolutely essential to preserve the teeth of children most effectually. Parents frequently rely on their own judgment as to the condition of their children's teeth, instead of placing them at a proper time under the care of a competent dentist. It was a sad error, and led to the most serious consequences.

He had brought with him the models of the teeth of a recent patient, which would not only give a good idea of his method of separating the teeth, but would also afford a striking illustration of some of the points just alluded to. The case was in some respects of a representative character, as it was one of thousands. The patient is a young lady seventeen years of age, of nervo-lymphatic temperament, very fair complexion, light hair, blue eyes, symmetrical features, and possessing one of the most perfectly-formed and beautiful sets of teeth he had ever seen. They were of that highly translucent and pearl-like appearance indicating a preponderance of the inorganic over the organic element. She is the only child of her mother, and has been petted and indulged, and allowed to have her own way probably too much for her own good. Being naturally timid and sensitive, she had a dread of dental operations, and had never laid his services under contribution except once, some ten years ago, to have a deciduous tooth extracted. All the others she had taken out with her own fingers, so perfect had been the absorption of their roots, so healthy and easy the process of dentition in her case. Indeed, she had lived so long without recourse to the dentist's aid, that both she and her mother had come to think that she would never require his services. Not long ago the mother called on him (a former dentist having died) to have some operations performed. In the course of conversation the daughter's teeth were referred to, when the mother remarked that they were perfectly sound; they had often been examined, and did not need anything; adding that she had never been to a dentist except to have the one tooth extracted. He replied that it was a most remarkable case—

a rare exception to the general rule, if her teeth did not need some attention.

The mother returned home, and subjected her daughter's teeth to a most critical examination, as she supposed, and on the occasion of her next visit stated that she could perceive one or two dark spots on them. He assured her that there was no doubt in his mind but that the teeth, upon a proper examination, would be found to be quite defective, and more or less of them would require to be operated upon. The result was that she brought her daughter; he examined the teeth, and the models exhibit the condition of them. He had already made fourteen separations—including all the upper teeth except the first and second molars on the left side; also the second bicuspid and first molar on each side of the under jaw. He had also inserted thirty-three gold plugs, and he had not yet completed the operations. All the teeth separated were more or less affected with caries upon the proximal surfaces, and eight of them to such an extent as to require filling. The shade of the caries in most of the teeth so closely simulated the natural color of the healthy dentine as to defy detection except under the scrutiny of an educated eye, aided by careful examination with finely-pointed probes. What a lesson does this case teach of deception and neglect! Soon these beautiful teeth would have been in ruins beyond repair. How much better every way to have confided the care of them years before to some skillful dentist. In that case the timely separation would have entirely superseded the necessity of the proximal fillings. He insisted on the importance of children being placed under the control of the dentist so far as to admit of the frequent and regular inspection of the teeth, that they may receive proper treatment before they become sensitive and painful, thus rendering the operations more complicated and difficult, and less certain to secure the end proposed. In separating the teeth, he had for many years used chisels with great satisfaction to himself as well as to his patients. The best and easiest-cutting chisels he had made himself, by taking half-round or oval Stubs files and grinding them down to the form and size he desired, using care not to draw the temper. Such chisels or enamel-cutters he had found decidedly superior to any he had yet been able to obtain of dental instrument-makers. With such instruments he could separate the bicuspid and molar teeth with little discomfort to the patient. He beveled the last-named teeth from the gum to the grinding and from the buccal to the palatine surfaces. The incisor teeth he slightly separated on their labial surfaces, but cut them away from the under side, being careful to remove all the carious part in superficial caries, or in case of deep-seated caries so as to admit of inserting the filling from the palatine surfaces. Where the decay had not progressed so far as to mar the natural form of the teeth,

he thought we should aim to preserve that form in its labial aspect unimpaired. The chiseled surfaces should be dressed down with curved or sickle-shaped instruments, and files of various forms, and then finished with finely-pulverized emery, and finally polished with levigated lime. It should be washed until its caustic properties are removed. The oxide of tin has been spoken of to me by Dr. Jack and others as being a valuable agent to give the final polish to dentine, but as yet I have had no experience with it.

Dr. Jack proposed to confine whatever he might say upon this subject to the proper form of separation to be effected between the bicuspids and the molars.

The first objection must come from one who may not have carefully acquainted himself with the particular manner in which the teeth should be separated for the purpose of certainly securing the exposed surfaces from caries. It will be said that the new condition will be worse than the former relation of the proximal surfaces. This is not the case. The separations are not made by passing a parallel-sided file directly through to the gum, excepting when it is found necessary to make a complete separation when Froid's is so used.

He would, in a few words, describe the method pursued by himself in separating the bicuspids. The first step is to use a Froid, at such an inclination as to secure the file cutting only between the two inner cusps nearly to the gum, the object being to facilitate the action of the chisel at this point, which instrument is now taken up, and a very considerable portion cut away from the inner side of the partial space, extending this wedge-shaped space toward the buccal surfaces, until, when the separation is complete, it will present a wedge shape in both directions—that is, be very much wider at the inside than the outer, and also very much wider at the inner cusps than at the gums. Should the superficial decomposition have extended nearly or entirely through the enamel, it must be perfectly removed, keeping always in view the necessary principle of maintaining the doubly-inclined space. In case any portion must be removed from the outer part, it should, when practicable, be removed from the first bicuspid, to avoid the disagreeable raking backward of the second bicuspid. When the chisel has done its work, complete the space by the use of oval files. Files of this form cut more freely, are less disagreeable to the patient than flat ones, and also produce a form of surface so shaped as to be readily cleaned by the current of food which sweeps through the space, as well as by the action of the patient's means of cleansing. One principal reason for the greatly doubly-inclined space, is to facilitate the maintenance of cleanliness of the part.

The file is held at the same inclination as was described for the use of the file in the first part of the operation. The surfaces are now

scraped smooth with any suitable instrument, to remove the inequalities, and completed by polishing with the different powders for the purpose, finishing always with the peroxide of tin.

In a few instances only had he known a recurrence of the decay, and when he had observed it, he could alway trace it to some imperfection in not properly shaping the surfaces, or to the decay having been so deep as to prevent the securement of plain surfaces. No one should attempt this operation of anticipating decay by opening spaces until he shall have clearly informed himself when and how it should be done, and not until he is provided with implements of the necessary form and degree of hardness, to enable a thorough accomplishment of the work.

One word in reference to the chisel, which is the most important instrument. It should be of extreme hardness; the temper should not be "drawn;" the steel of the best quality, and the edge, after being ground down at an angle of 40°, to be at the very point sharpened at an angle of 80°; an acute edge of such hardness must inevitably break, and an instrument less hard will not cut the enamel.

Prof. Stellwagen: As all know, filing is a very ancient practice; it had been recommended over thirteen hundred years ago, and other cutting instruments for the same purpose were added shortly after.

He thought that the remarks of Prof. Arthur were yet liable to misapprehension; according to the arguments, the little danger that resulted from an error of judgment where the file was used too frequently, did not require or necessitate its use, but were only advanced to prove the slight degree of harm resulting from it.

From a hasty examination of his books of record, which extended back some nine or ten years, it had not appeared to him that the mere fact of finding caries upon the proximal surfaces of the incisors, would warrant the separation of all the teeth, unless it was further shown to be necessary by the other signs of predisposing and exciting causes. It is always important, when disease is treated, to remove the cause or causes as far as possible; and often the permanent separation of teeth is demanded to fulfill this requirement. The texture of the teeth, their articulation, when in contact with those of the other jaw from that to be operated upon, and in a word, the conditions of their surroundings and that of the patient in general, should all be taken into consideration, as only one experienced in dental practice could do; in this, familiarity with the microscope and the practical manipulations in preparing specimens, were necessary to judge of the presence of natural imperfections of the dentine, etc., such as interglobular spaces, or any conditions that would frequently forbid filing, since the impossibility of obtaining hard or smooth surfaces, after the removal of the enamel, could be understood.

He looked forward to the day when the specialty would demand that

prophylactic treatment should compel the attention to the whole system —in other words, so to build up and strengthen, so to nourish and replenish, by food, fresh air, sunlight, and, if called for, the materia medica, as the only true and scientific management of the mouth. By these means, and the use of antacids locally, he believed he had been able often to arrest the ravages of caries in the mouths of his patients.

He had seen many cases where, by filing so as to produce self-cleansing surfaces, a practice by no means new, he had completely overcome the difficulty, and yet the process of caries had continued in other parts of the same mouths.

While he held himself always open to conviction, he could not go to either extreme; and although he had never yet been able to see arguments of sufficient weight to refute the facts in favor of conservative filing, upon the other hand, he did not admit that up to this time he could conscientiously practice indiscriminate separation, nor did he understand Prof. Arthur as so advising.

There was one point he desired to call attention to, namely,—the separation of the teeth demands that they should be constantly examined and attended to afterward. To do this seldom requires more time or trouble than to properly watch them until the earliest symptoms of trouble appear, so that it would often be well to pause before interfering where there was a certainty that nothing of the nature of caries had yet presented.

He would like to know whether cutting away the proximal surfaces during second dentition, as had been proposed, would not interfere with the expansion of the arch of the jaw, and thus favor irregularity of the permanent set.

Adjourned.

ILLINOIS STATE DENTAL SOCIETY.

THIS society convened for its sixth annual session at Bloomington, May 10th, 1870, the President, Dr. M. S. Dean, of Chicago, in the chair. After the calling of the roll, and the reading of the minutes, several names were proposed for membership.

At the afternoon session, the discussion of topics selected was proceeded with, the first subject, "Exposed Pulps," being opened by a paper by Dr. G. V. Black, of Jacksonville.

Dr. Black reviewed the question of oxychloride of zinc as a capping for exposed pulps, and gave detailed results of a large number of experiments made during the past ten years with this material. The result of the whole seemed to prove that, in his hands at least, oxychloride had not proved equal to the hopes he had formed. It seems that though quiet in many cases for a long period, the pulps are, in a very

large majority of cases, sure to die, and cause further trouble. Dr. Black recommends the quill and plaster of Paris instead of oxychloride, because they are both destitute of irritating properties.

The subject being open for discussion—

Dr. Crouse said he thought ninety-nine out of every one hundred pulps once exposed will die, because the ragged edges of the cavity will produce chronic inflammation unless new dentine is formed; would prefer quill to plaster, as he thought the latter would absorb; had had no faith in capping till the advent of oxychloride; but now did not destroy one pulp where he formerly did ten,—that is, not with arsenic; *perhaps* he is doing it with oxychloride; has seen three cases of secondary dentine; never has had success in cases of chronic inflammation.

Dr. Black thinks the quill can be so adapted, by carefully smoothing the edges of the orifice of exposure, as to make a continuous surface next the pulp; thinks the pulp may be exposed by absorption, after the introduction of the filling.

Dr. Smith reported three cases of secondary dentine being produced where the pulp was fairly exposed.

Dr. Dean reported a case of production of secondary dentine over a pulp which bled freely; the tooth being broken off, it became necessary to drill to reach the pulp; is an advocate of oxychloride; finds that very few come back, though he uses it constantly; considers it a good thing in practice generally.

Dr. Cushing said his own experience did not lead him to be as enthusiastic as some of the extreme advocates of oxychloride; neither would he condemn it at all; uses it frequently, and has yet to see any serious results from its use, but is rather fearing to see unfavorable cases every day; thinks Dr. Black's experience of ten years more valuable than any theories, and would not be astonished to see his views, as to the destruction of the life of the pulp by oxychloride, established in the long run, but still deems it a valuable adjunct to conservative practice, and believes it is now too early to pronounce definitely as to its value.

Dr. Howard stated that he had succeeded uniformly, so far as he knew, by using, before applying the oxychloride, colorless collodion, two parts, and a solution of morphia, one part, which he said prevented pain, and adhered closely to the pulp; applies four or five coats with a camel's-hair brush. The pulp can be seen to throb under the pellicle, by the aid of a lens. The colorless collodion will make a scale that will not crack.

The next subject was then taken up, and opened by Dr. C. S. Smith, of Springfield, who read a paper on "Arsenious Acid: When and how to use it."

Dr. Smith took the ground that arsenic should be used whenever the

dental pulp was to be destroyed,—the use of the broach for this purpose being condemned; that it should be used in all cases when the tooth has been subject to spontaneous pain, or whenever patients could not procure competent professional assistance at any time, oxychloride being too unreliable for such cases.

The practice of leaving the application in from one to two weeks was advocated,—it being claimed that no danger ensues if the arsenic is properly secured, and that the pulp is more easily removed; that the arsenic does not enter the circulation, even of the pulp, was shown by a number of experiments detailed. The use of arsenic in temporary teeth was regarded as perfectly safe. Caution, however, in its use in all cases was recommended.

The subject being open—

Dr. French said he had been in the habit of using arsenic in children's teeth with no bad results and with charming effect.

Dr. Crouse thinks arsenical applications are swallowed without harm in many cases; formerly thought it dangerous to leave it long in the tooth, but this opinion he has been compelled to change; thinks periostitis, when produced, results from the escape of the arsenic; is opposed to the destruction of the pulps of temporary teeth; thinks they are not so readily absorbed when devitalized; would not use arsenic when there is a high state of inflammation without first using creasote.

Dr. Smith thought an arsenical application might be safely swallowed: it is known that arsenic is eaten by many people for the purpose of improving the complexion; thinks the application of arsenic the best remedy for an aching tooth, however highly inflamed.

Adjourned.

SECOND DAY.

The morning session was devoted to clinical operations by Drs. Cushing and Crouse.

At the afternoon session, the next subject, "Complicate Fillings," was taken up, and opened by the reading of a paper by Dr. M. S. Dean.

Dr. Dean said he was becoming daily more strongly convinced that very many failures occurred, which might have been easily prevented had complicate fillings been resorted to instead of simple ones. He should attempt to call attention briefly to such cases in practice as indicated complicate fillings, and offer some suggestions as to the preparation and proper mode of filling complicate cavities.

He first directed attention to the bicuspid teeth as most frequently requiring such fillings. When, in these teeth, the cavities in the anterior and posterior pits are connected by an almost imperceptible fissure; or, when the enamel between these presents a roughened appearance threatening disintegration, these cavities should be united in one. If, in addition to these cavities, there is one in either approximal sur-

face, or both, the coronal wall should be cut away, and all the cavities united together, unless the approximal cavities are small and the coronal walls very strong; and even then this is often the better course to pursue, in order to gain room and a direct avenue into the cavity. When these approximal cavities have become *very large*, and the enamel on the buccal and palatal walls have lost their supporting dentine, the weak portions should be freely removed, and one or more pits must be cautiously drilled into the cervical wall, and a larger and deeper one, if possible, on the grinding surface. When the retaining pit in the cervical wall can be made to hold the gold securely, the filling should be commenced here with heavy foil (say No. 20 or 30, as they make stronger retaining points than the lighter foils); then extend the filling across the base, taking small pellets or pieces of heavy foil,—whichever you can manipulate the best,—using a small foot plugger, and allowing the point to extend slightly beyond the margin, taking care that this part of the work be made absolutely perfect. Then, if not sure that the retaining point or points at the base are strong enough to build the filling upon without danger of breaking or dislodging them, partially fill the large pit on the grinding surface, and unite it with heavy foil to that in the base, and commence again at the bottom of the cavity, using, as before, the foot plugger over the margins of the approximal filling. If we have cavities in both approximal surfaces of this bicuspid, they should be united before either filling is completed, by strips of heavy foil; and if the cusps are so weak as to be endangered by mastication, they should be filed down and covered with gold.

He next described his method of filling a superior molar having a cavity in the central pit, separated by an imperfect crest, from one in the posterior pit; from the posterior pit a fissure led over to a palatal cavity, and from this cavity a fissure divided the anterior palatal cusp. In addition to these, there was a large posterior approximal cavity. In preparing this tooth he would cut across the crest and unite the cavities in the central and posterior pit, and, by removing the coronal wall, open the approximal cavity. With a file open the fissure from the posterior pit to the palatal cavity, and, with drills, the fissure leading around the depressed cusp, and at its terminus form a suitable retaining pit.

He would commence filling in the retaining pit in the cervical wall of the posterior cavity, and, as in the case of the bicuspid, unite all the cavities and fissures in one. In the inferior bicuspids and molars he would apply the same principles, with a little variation in practice.

There was a class of under molars upon which the enamel of the entire grinding surface was found very imperfect when erupted, as if imperfectly fused. If in these disintegration had not already commenced, he would cut and polish out this pitted, convoluted surface; but if, as was generally the case, he found buccal and lingual fissures, and

small cavities in different portions of the grinding surface,—not well defined, but fissures branching in all directions,—he would cover the entire grinding surface with foil.

In the incisors and cuspids which had been worn down by occlusion, he would unite the approximal cavities by cutting a groove across the cutting edge (or what had become the grinding surface), making a complicate filling, and at the same time building upon this surface, as the case might require.

Dr. Crouse agrees with the paper entirely, and thinks these operations more frequently required than formerly, owing, probably, to nicer discrimination; thinks there are many cases where the incisors are decayed on both sides, and defective on the cutting edge, which require that the filling be carried across the cutting edge. The same also with bicuspids and cuspids, when worn down. The buccal fissures on lower molars should be followed out. He would file down from the crown cavity in these cases; would cut down posterior cavities from the crown.

Dr. Forbes, of St. Louis, thought the enamel should be covered, to prevent fracture; did not understand about the anterior and posterior pinholes in bicuspids, spoken of in the paper.

Dr. Dean said in approximal cavities he would make a retaining point at the base, and use heavy foil; would not depend on the dovetail nor overhanging enamel; would rather trust to the anterior and posterior retaining points.

Dr. Forbes said the compound filling had been handed down from the fathers,—the rule was to make one cavity go into the other. Filling teeth is a simple operation to what it was in his younger days. The preparation of the cavity is the great point now. What is the objection to the use of cylinders as a foundation, a tooth presenting but two thin walls—the inner and outer?

Dr. Cushing replied that he thought them not as good; when the tooth had been cut through, the filling should be made as cohesive as possible, and securely anchored at the base, where there was strength, and that the strain would be less by the adhesive plan, the walls less likely to break away.

Dr. Forbes thinks the objection to cylinders is that adhesive foil cannot be welded to soft foil; would use a cylinder of adhesive foil if he could wedge against the adjoining tooth, but not otherwise.

Dr. Crouse says the day is past for filling a cavity half full with one pellet, which is about the same as a cylinder.

Dr. Black thinks bands of enamel may be left oftentimes, and that the surface of gold exposed should be as small as possible, to lessen thermal irritation.

Dr. Cushing thinks teeth are often cut away by careless operators, without regard to thermal changes; but many cases are left simple when

they should be made compound. Would rather cut too much than too little. Pin-head cavities connected by seams should be made to run together, especially in the fissures in bicuspids.

Dr. Sturgiss has given up the idea of supporting enamel by filling under it, but has not decided whether any enamel may be left unsupported by dentine.

Dr. Cushing thinks such enamel, even when thick and strong, had better be cut away, as it is not very likely to last. He believes enamel has vitality, and is nourished, but only when supported by dentine.

Dr. Forbes thinks we should be governed in cutting away by the constitution of the patient; would cut away all frail enamel, and build over.

Dr. Eames, of St. Louis, thought the bicuspids most likely to decay were those having high cusps; fills cavities with overhanging enamel by filling the most difficult wall first, then the other, and last the centre; does not like cylinders because there is no cohesion; but with children, or when time is an object, sometimes resorts to them.

Dr. Black thinks any fissure leading from the cavity should be cut out, whether decayed or not; but would not fill a fissure not enterable by a small point unless there was a cavity.

Dr. Porre advocates running fissures out to their utmost ramifications; would err on the safe side, would protect the margins with gold.

The next subject, "Separating Teeth, When and how?" was opened by a paper by Dr. Crouse.

In answer to the proposition of when to separate, he said the question divides itself naturally into three heads, viz., as to the purposes of separating—first, to prevent decay; second, to secure opportunity for correct diagnosis; third, to make room for successful operations. He denied the theory that filing was necessarily injurious, and thought where there was very slight superficial decay the file should be used to remove it; the tooth always to be thoroughly polished after using the file. He did not believe in filing the teeth of young patients, or any others, simply because they might some time decay. He would recommend the separating by chisels and files of certain classes of teeth which touch one another at the cutting edges, when the spaces left above and between the necks of the teeth furnish such lodgment for food that it cannot easily be removed; but if such teeth can be easily kept clean between them, would not separate. He especially recommends this course in the case of teeth from which the gums and alveoli have receded; such teeth are almost always decayed on their approximal surfaces, above the enamel; and he urges thorough filing in such cases, to remove every particle of diseased structure, and very perfect polishing afterward, as most likely to result in the saving of the teeth.

In separating for diagnosis, he thinks it is our duty, when teeth are

under our care which are crowded, and we cannot ascertain, beyond a doubt, their condition on the approximal surfaces with the most delicate instruments, to *wedge* them apart sufficiently to ascertain with certainty their condition; this, he says, may be done by wedging at once at the time of examination; but he prefers and recommends the slow process.

In separating for space to fill, he would use all methods, choosing such method as the case might indicate. He acknowledges that sometimes it is proper to use the method known as quick wedging; but as a rule, denounced the practice of separating teeth indiscriminately by quick wedging, and thought that in a majority of cases it was barbarous practice. Would sometimes separate the molars and bicuspids by wedging, sometimes by the file; preferred wedging for the incisors, even when cutting away somewhat from the palatal aspect. He prefers pine wood for gradual wedging; does not deem rubber a proper material for the purpose; would wedge *very* slowly, thus securing almost entire immunity from pain or soreness in the operation. But in whatever way he separated for the purposes of filling, he insisted upon ample space, to secure the most perfect operations.

The subject being open—

Dr. French said that the eclectic method advocated by the paper is the true one. He wedges first at gum, and then at point. Cotton is not so quick nor so neat as wood. He never files a healthy tooth to get room; would prefer extraction to having half the crown of gold in an incisor.

Dr. Kitchen finds it necessary to use both file and wedge when teeth are lapped and both decayed.

Dr. Black says he cuts down from the crown, and fills with gutta-percha for four or five days, when the pressure of mastication will have separated the teeth. His patients like quick wedging. Thinks soft wood not fit for wedges.

Dr. Miles finds better satisfaction is given by what is called rapid wedging,—that is, from five to thirty minutes; supports the teeth firmly with left hand; thinks if the tooth is saved, it is of no consequence whether gold shows or not.

Dr. Dean presented the matter of the testimonial to Dr. Barnum, and a private subscription to the amount of nearly $125 was obtained.

EVENING SESSION.

Subject of wedging still under discussion.

Dr. Cushing thinks we are not thorough enough in examination of dentures, which can, in many cases, be done only by wedging; uses very delicate instruments for the purpose of examination.

Dr. Crouse thinks when the teeth touch at the point, and there is a

repository for food, etc. above, they should be filed to prevent decay; would make the space equal at neck and point, polishing with pulverized Scotch stone; thinks we shall find about double the number of cavities by wedging.

Dr. Sturgiss has never been able to follow any extreme. Has driven wedges hard, but has ceased to use the mallet. Uses rubber, cotton, etc.

Dr. Wilson found that his patients would not separate their own teeth as claimed.

Dr. Howard thinks they will; advocates slow wedging; thinks the pulp is often killed by driving wedges.

Dr. Eames has seen much injury from rapid wedging; had followed heroic wedging, but not exclusively; cuts away more than formerly, and thus requires less separation.

Dr. Forbes will never allow rapid wedging on his teeth. He objects to filing teeth unless decayed. Indiscriminate filing was in vogue in his day. Below the age of thirty, he thinks it will cause rather than prevent decay; thinks the judicious use of the file and wedge the most important subjects before the profession.

Dr. Black admits that there is danger from rapid wedging, and especially where the teeth are most easily separated. Soft wood forms a shoulder when driven against the tooth, and requires more force. He has seen cases of injury from *slow* wedging.

Dr. Henry has seen cases of death attributed to heroic wedging; thinks well-burnished hickory the best material; has seen cases of wedging by eminent operators condemned by the patients as heathenish.

Dr. Eames thinks we should consider the anatomy of the parts; hard compression must produce high inflammation; drives wedges very gradually.

Dr. Dean thinks filing will sometimes preserve teeth as well as filling, and that it does not necessarily produce decay; sometimes files between bicuspids in a V-shape in children's teeth, but only when it seemed impossible to save them without; does not advocate filing to the extent proposed by Dr. Arthur; practices slow wedging in general. Subject passed.

Adjourned till to-morrow.

THIRD DAY.

"Heavy Foils and Heavy Mallets," the next subject in order, was opened by the reading of a paper by Dr. Cushing.

His paper referred to the extraordinary revolution in ideas and practice which this subject brought under consideration, and endeavored to reason, philosophically, upon the claims which were made for heavy foils. He thought the claims made could be established, and showed that the principal obstacle which barred the way to an acknowledgment

of these claims, in the minds of most individuals, arose from the fallacy which existed regarding the use of light foils; as he claims that, as used, the lighter numbers are practically harder to work than the heavier. He claims that the lighter numbers, as prepared for use, present a mass from ten to twenty times the thickness of the original foil, and being so irregularly folded upon themselves, they are much more difficult to condense than a single sheet would be, corresponding in thickness to the number of folds of the lighter foil. He thought that all persons desiring to secure the highest attainment, should certainly give the heavy foils a fair trial. He advised caution in experimenting; thinking beginners had better use Nos. 20 and 30 to commence, and then try the heavier. He spoke of Dr. W. H. Atkinson being the first to call the attention of the profession to this subject in this country, so far as was generally known, and of Dr. H. J. McKellops, of St. Louis, as first introducing it in the West. He stated that he had been informed, by Dr. Horace Enos, of Chicago, that Dr. Evans, of Paris, had been using gold as heavy as 120, for fully six years past. With reference to "heavy mallets," he felt sure that any person who would give the matter a fair trial would find the lead mallet weighing from six to eight ounces the one preferred by ninety-nine of every hundred patients. He had experimented daily, for some months, with mallets of lead, steel, wood, hard rubber, lead covered with leather, and of all these of various weights; and the universal choice was, by the patient, for the uncovered, heavy lead mallet. He had hoped, when agreeing to write upon this subject, to have been able to present some philosophical argument upon it, and in support of the demonstrations of experience; but had found the subject not so easy of explanation. Various scientific men with whom he had conversed and corresponded, agreed in the statement that the philosophy of "impact" was very imperfectly understood. He gave a report of some experiments he had made in endeavoring to elucidate the subject, which were remarkably interesting, as going to prove how little the accepted theories coincided with experimental research.

The subject being open—

Dr. Crouse said that he was one of those who opposed heavy foil vigorously, ridiculed it, and refused to examine the results; also, procured some for the purpose of ridicule, but was converted, and now used nothing lighter than 20; had experimented with it in cavities with notched margins, and to his surprise found the borders perfect. It requires great care, however. He thinks he can get along about as fast with the heavy foils in ordinary cases; can get in one-third more gold of No. 60 than of No. 3; but the results are better almost invariably. For building up it is admirable. He can use four thicknesses of No. 60 in favorable locations. As to mallets, he has used all kinds, but finds

by experience that lead is preferable to himself and patient in nearly all cases.

Dr. Babcock uses a tin mallet of six ounces, and finds it the best for strong teeth, but in frail or loose teeth, wood is, in many cases, preferable.

Several gentlemen expressed themselves in favor of lead, almost universally. Some recommended a surface of leather as less annoying.

Dr. Cushing recommended No. 20 or 30 to those beginning the use of these foils; advises caution and not too large pieces at first.

Dr. Smith has used heavy foils, 30 and 60, and finds himself using more and more of the latter day by day; uses tin and lead mallets, three to six and a half ounces; finds lead the best in most cases.

Dr. Crouse suggests, that in round-bottomed cavities, without retaining points, he would use pellets of light numbers in the bottom.

Dr. Dean rose to commit himself in favor of heavy foils, though at first opposed to it; had gradually got to using some of the *gold plate* (No. 240), and to his astonishment found it produced the most beautiful fillings he ever put in; was strongly prejudiced against the lead mallet, but has used it every day since the first trial, some nine months since, and finds, after questioning his patients closely, and using the light and heavy mallets alternately, that they always prefer lead; would sometimes prefer a light mallet in incisors or loose teeth.

Dr. French thinks much depends on the elasticity of the blow struck. If heavy foil is laid flat it does finely; but thinks that leaks may be found after awhile at the cervical margins.

Dr. Cushing thinks heavy foils especially adapted to the cervical margins. If properly manipulated, and the margin prepared properly, the chances of failure will not be as one to ten with lower numbers.

Dr. Babcock thinks he has secured results with heavy foil impossible with light numbers; has more confidence in his fillings, and wastes less gold.

Dr. Henry has used heavy foils, and bears out the statement that one-third more gold may be used.

The subject was passed.

The next subject, "Legislation for the Protection of the Public against Dental Imposition," was opened by the reading of papers by Drs. Cushing and Black, and after a pretty full expression of opinion, resolutions were passed providing for the appointment of a committee to draw up and secure the passage of a law which should prevent any person beginning the practice of dentistry in the State who shall not hold a diploma from a dental college or a certificate from a board of examiners. This plan not interfering with any now in practice, it was thought would meet with no objection from any quarter.

The subject of "Mechanical Dentistry" was then taken up, and opened by the reading of a paper by Dr. A. W. French, of Springfield.

Dr. French, after giving a résumé of the progress of mechanical dentistry from the earliest introduction of dental substitutes to the present day, discussed several points relative to the construction and adaptation of entire and partial dentures. The importance of correct articulation, and as near an approximation as possible to the curved arrangement of the natural organs, was insisted upon. The relative merits of rubber and gold were discussed, and the latter advocated by the essayist, particularly for partial sets. Rubber is undoubtedly often productive of deleterious results, and cases of chronic nasal catarrh have been observed to occur coincident with the wearing of rubber plates. Closer observation may discover more of these cases. The absorption of the tissues is considered greater under this material, making a renewal of the set necessary, and thus making the expense in the long run nearly equal. The use of clasps and narrow plates in deep mouths where it is difficult to obtain correct impressions, was advocated as more easily adapted, and also the use of plain teeth as being more natural, and, where no space exists for clasps, a pair of horns at each end of the plate, which can be sprung into place. The paper closed with a quotation from "Dentalogia," a poem on dentistry, by Solyman Brown.

A discussion followed upon the relative merits of rubber and other substances as base for artificial teeth. Weston's metal and aluminium were recommended by Drs. Eames, Babcock, and others. The following resolution was then passed:

Resolved, That we disapprove of the use of rubber as a base for artificial teeth, believing that metallic plates are cheaper and healthier to all classes of persons.

Dr. Eames exhibited a plate of cast aluminium, made by himself, by a process which he thought might be made successful.

Dr. H. M. Sill, of Chicago, exhibited an apparatus for regulating the heat and guarding against explosion while vulcanizing. It is a safety valve and thermometer combined, and presents the appearance of perfectly supplying a want long felt in this department. It is said to be impossible to raise the heat 10° above the point at which it is set, and requires no watching after lighting the lamp; can be set at any degree of heat required, and can be easily attached to any vulcanizer.

The society then proceeded to the selection of the next place of meeting and the election of officers. Galesburg was chosen as the place of meeting next year. The following officers were elected for the ensuing year:

President.—Dr. G. V. Black, Jacksonville.

Vice-President.—Dr. S. C. Wilson, Bloomington.

Secretary.—Dr. C. Stoddard Smith, Springfield.

Treasurer.—Dr. G. P. Kingsley, Freeport.

Librarian.—Dr. E. C. Stone.

Executive Committee.—Drs. E. F. Davis and E. C. Stone, Galesburg; S. C. Wilson, Bloomington; G. S. Miles, Jerseyville, and S. L. Edwards, Griggsville.

The sum of $25 was voted to the Barnum Testimonial, from the funds of the society.

After the transaction of various miscellaneous business, of no general interest, the meeting adjourned, having had, in the opinion of all, the most interesting and profitable session ever held in the State, to meet at Galesburg, on the second Tuesday in May, 1871.

C. STODDARD SMITH, *Secretary.*

SOUTH CAROLINA STATE DENTAL ASSOCIATION.

THE meeting of this association was held in Columbia, S. C., on the 5th, 6th, and 7th of April, 1870.

A call having been made (by the members of an association previously formed) for a new association that would embrace every portion of the State, on the day appointed a large number of dentists assembled in Columbia, and proceeded to form a "State Dental Association."

The following officers were elected to serve the ensuing year:

President.—Dr. J. B. Patrick, Charleston.

1*st Vice-President.*—Dr. W. C. Wardlaw, Abbeville.

2*d Vice-President.*—Dr. H. R. Hanbery, Barnwell.

Corresponding Secretary.—Dr. Thos. T. Moore, Columbia.

Recording Secretary.—Dr. O. J. Bond, Marion.

Treasurer.—Dr. Theo. F. Chupein, Charleston.

The President appointed the following standing committees:

Executive Committee.—Drs. D. L. Boozer, G. F. S. Wright, A. K. Durham, N. Simms, and Saml. A. White.

Committee on Membership.—Drs. William L. Reynolds, E. C. Jones, J. R. Thompson, B. C. Hart, and Geo. H. Winkler.

Committee on Operative Dentistry.—Drs. O. J. Bond, Wm. C. Wardlaw, Thos. T. Moore, W. S. Brown, and Theo. F. Chupein.

Committee on Mechanical Dentistry.—R. S. Whaley, W. A. Fallaw, H. R. Hanbery, J. H. Alexander, and B. A. Muckenfuss.

The following were elected delegates to the Southern Dental Association: Drs. S. B. Patrick and W. C. Wardlaw.

Delegates to the American Dental Association.—Drs. Thomas T. Moore and H. R. Hanbery.

The delegates to the Southern and American Dental Associations were instructed to use their influence in having a committee appointed to petition Congress to appoint dentists in the army and navy of the United States.

After a very harmonious meeting, the association adjourned, to hold its semi-annual meeting in Charleston, in November next, and its annual meeting in Columbia, on the first Tuesday in May, 1871.

THOMAS T. MOORE, D.D.S., *Cor. Secretary.*

AMERICAN DENTAL ASSOCIATION.

THE tenth annual meeting of the American Dental Association will be held in Representative Hall, Nashville, Tennessee, commencing August 2d, 1870, at ten o'clock.

All delegates must answer the requirements of the following form of certificate:

"This certifies that ——— ——— was duly appointed a delegate to the American Dental Association on the ——— day of ———, 18—, by the dental society of ———, and that said——— ——— is a dentist of good character and standing, and is at this time in regular practice."

Dr. Morgan writes that the hotels will make liberal deductions to members and their friends—at the Maxwell House, $2.50 to $3.50, according to floor occupied, and at the Stacey House $2.00 per day. All the railroads running into Nashville, together with those from Louisville, promise half fares, and it is hoped most of the roads will make a similar reduction. Dr. Shadoan reports that arrangements have been made with the proprietors of the Mammoth and Procter Caves for greatly reduced rates to those attending the Convention.

The location is so central that it is hoped there will be such a general concentration of our profession from North, South, East, and West as has never been known.

I. A. SALMON, *Cor. Sec.*

BOSTON, May 25, 1870.

MASSACHUSETTS DENTAL SOCIETY.

THE seventh annual meeting of the Massachusetts Dental Society was held May 19th, 1870, at their hall, No. 12 Temple Place, Boston.

The officers elected for the ensuing year were as follows:

President.—Dr. Thomas H. Chandler.

1*st Vice-President.*—I. A. Salmon, D.D.S.

2*d Vice-President.*—Dr. T. H. Batchelder.

Recording Secretary.—D. G. Harrington, D.M.D.

Corresponding Secretary.—Dr. Edmund Blake.

Treasurer.—J. T. Codman, D.M.D.

Librarian.—Geo. T. Moffatt, M.D.

Microscopist.—T. B. Hitchcock, M.D.

Executive Committee.—E. G. Leach, D.D.S., T. B. Hitchcock, M.D., J. M. Daly, D.D.S., Drs. J. F. Adams, and G. F. Waters.

Professor L. D. Shepard delivered the annual address. Subject, "Professional Fidelity."

Essays were also read by Drs. Cogswell, Codman, and Blake.

Delegates to the American Dental Association.—Dr. Thomas Cogswell, Dr. Jas. Shepherd, Dr. Edmund Blake, Dr. J. F. Adams, E. G. Leach, D.D.S., J. T. Codman, D.M.D., D. G. Harrington, D.M.D., Edward Page, D.M.D., S. J. McDougall, M.D., S. F. Ham, D.M.D.

There was a good attendance, and the meeting was interesting and profitable. D. G. Harrington, *Recording Secretary.*

FIRST DISTRICT DENTAL SOCIETY OF NEW YORK.

The annual meeting of this society was held on the 8th of June. The officers elected for the coming year are:

President.—Dr. J. G. Ambler.

Vice-President.—Dr. E. A. Bogue.

Treasurer.—Dr. Charles Miller.

Secretary.—Dr. O. A. Jarvis.

The retiring President, Dr. A. C. Hawes, read his address, and the society voted that the same be published in the Dental Cosmos. Our meetings are held the second and fourth Wednesday evenings in every month, and clinics given the afternoon of the same day at S. S. White's Depot, which our friends from abroad are invited to attend. Our vacation will extend to the fourth Wednesday evening in September.

O. A. Jarvis, *Secretary.*

CORRESPONDENCE.

TRANSACTIONS OF THE AMERICAN DENTAL ASSOCIATION.

To the Editor of the Dental Cosmos:

What disposition has been made of the extra copies of Transactions of the American Dental Association? The Publication Committee for the last few years have reported from one hundred and fifty to three hundred surplus copies. Now, is it necessary that the members should be required to meet this extra expense when the association derives no benefit from it?

At the meeting at Niagara, the above committee, in their report, recommended that these extra copies be presented to different scientific societies, colleges, and journals. Would it not be well, at our next meeting, to have a report in regard to this matter,—for thus far we have no evidence that such distributions have been made,—and in the future, to publish no more than are wanted by the members; and should there be any surplus funds in the treasury, use them for the encouragement of valuable productions which may be brought before the association?

A Permanent Member.

June 4th, 1870.

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

Dental Caries; Relation to Food and Social Condition.—"In a recent number of the Transactions of the Odontological Society may be found a paper by Mr. Mummery, 'On the Relations which Dental Caries, as discovered amongst the ancient inhabitants of Britain and amongst existing Aboriginal Races, may be supposed to hold to their Food and Social Condition.' A disquisition of this kind holds the same relation to a chapter on the pathology of caries that a memoir on the comparative anatomy holds to a chapter on the pure physiology of a set of organs. It is, whilst more entertaining, still somewhat less strict and severe; it indicates and illuminates, rather than constructs, the road to conclusions; it presupposes and confirms, rather than creates, the knowledge into the possession of which we come ordinarily by the observation of individual, not of tribal, histories.

"In caries, as in many other diseases, we have two factors, two causative agencies, to deal with. One of these predisposes from within, being a general or constitutional condition; the other acts locally: the former is a vital, the other is usually a chemical, and occasionally a mechanical agent. An unhealthy condition of the general system, such as malaria, miasma, struma, or rickets may produce, induces local debility, and, practically and actually, death of particular spots on a tooth's exterior; and upon this area food and the oral secretions will act, just as they act upon artificial teeth, chemically and physically. For throwing light upon the relative efficiency of general antihygiene and of local causes in the production of caries, Mr. Mummery has amassed a colossal pile of materials, having examined, as he informs us, more than 3000 skulls, ancient and modern, and tabulated no less than 1956. Of these latter, some 456 belong to ancient races, and of these 456 there were 420 which belong to the ancient inhabitants of our own country.

"To speak, first, of general constitutional conditions, we find a singular fact furnished to us in the statistics of the pre-Roman inhabitants of this island. These figures, as given by Mr. Mummery in his tables and in his letter-press, show us that whilst dental caries was rare in the dolichocephalic inhabitants of the Wiltshire district, as represented in the collection of Dr. Thurnam, at Devizes, in about sixty of the skulls collected by Canon Greenwell from the Yorkshire tumuli, no less than twenty-four exhibited more or less of this disease. This difference Mr. Mummery appears inclined to ascribe to some local, possibly climatic, condition, rather than to any difference in food. For the teeth of the Roman settlers in Yorkshire contrast to a still greater disadvantage with those of their brother immigrants into other parts of England; and as the Romans were very differently dieted from the Dolichocephali, whom Dr. Thurnam has shown to be the earlier of the two pre-Roman British races, the condition of food would appear to be eliminated in favor of that of locality in this particular question of causation. Caries, we may add, is at this day *said*, we do not say *proved*, to be commoner upon certain geological formations in the north of England—in Cheshire,

for example—than elsewhere and upon other stratifications. Mr. Mummery, on the other hand, shows that general antihygienic conditions of local origin, but of a different kind from any prevalent either now or formerly upon the bleak Yorkshire uplands, can produce the self-same conditions of teeth. 'The promontory of Corea is a marshy, unhealthy district; the people are a small, stunted, and shriveled race, far inferior to the Chinese generally; they have miserable health, and suffer much from carious teeth.'

"Our author passes 'from China,' not 'to Peru,' but to Switzerland; and, to the same effect as in the foregoing quotation, we read that in certain valleys of the Alps, where local conditions produce goître and cretinism, we have also dental disease exceedingly common; whilst people similarly bred and similarly fed, but perched up where the sun can enlighten and enliven them, in the true sense of this latter word, have little dental disease.

"Mr. Mummery's views as to the connection which may subsist between premature mental development and premature dental decay, should be urged upon the tender consideration of mothers and fathers of 'prodigies'; as should also his suggestion as to the effect which calomel and gray powder may have in the way of honeycombing the teeth of such darlings.

"From the consideration of the general to that of the local causes of caries, a transition is afforded by one of the columns in Mr. Mummery's tables, which is headed, 'Width of arch at first molar.' A crowded state of the teeth is often accompanied by caries of those organs. The crowded state of the teeth is due to malnutrition of the dentigerous arches. Now, is the caries due to the lateral pressure produced by the crowded state?—or is it, like the pressure and crowding, a direct effect of the primary term of the series—viz., the malnutrition? Much may be said (but not by us here) on both sides of this question. Mr. Mummery, we think, inclines to the former of the two views we have indicated. We ourselves should incline to the latter; but we would not be supposed to forget that irregularly set teeth will favor the lodgment of decomposing and of recompounding organisms, such as débris of food and the vibrios which arise in and around it, and the setting free thus of carbonic acid, to the great risk of exposed and debilitated dentine and cement.

"Coming now to the action of ingesta, and beginning with a very simple case, we may remark that the unwisdom of using siliceous tooth powders is well illustrated by Mr. Mummery's history of certain Northwest American Indians, whose teeth are worn down to the very stumps by the sand which works itself into the drying salmon which, when dried, forms the staple of their diet. These same savages, it is interesting to remark, furnish us with an illustration of another lesson—to wit, the great value of a good supply of food in enabling the system to take up the line of repair rather than that of inflammation when irritated. When the pulp of their sanded teeth is exposed, it calcifies, and they ordinarily escape the alveolar abscess which ensues in races, such as the ancient Egyptians, where particles of silex are ingested, but in company with, or entangled in, a lowly and not highly nitrogenized diet.

"Alum and sugar have their working alluded to; and were the subject less of what a recent 'stopping' makes us feel it to be a 'thrilling' one, we should say *amusingly* illustrated. The detection of an unholy

alliance between the baker and the alum manufacturer, and the rewards for victory which were issued to Skinner's Irregular Horse, form interesting histories. Ten pounds of sweetmeats, it would appear, were served out to each hero in the distinguished corps just mentioned after each of their many triumphs; and, but that we have heard that these warriors, being Eurasians, got more pay than Europeans, and contrived to do less work than Asiatics, we should, for physiological as well as for other reasons, deeply regret that they should have been disbanded by a cheese-paring or rather a sugar-saving Government. But similar experiences as to the value of sugar in war may be gathered from the history of many other campaigns, both in ancient and modern times. Jonathan had 'his eyes enlightened' by eating honey when warring under his perverse and unhappy father against the Philistines; and the commissariat in the late great American war has much to say as to the demand for saccharine matter which they had to supply and satisfy.

"We cannot follow Mr. Mummery through the extensive range of archæological references through and along which he carries his readers, laying the laws of the Roman Ten Tables and those of our Anglo-Saxon forefathers alike and indifferently under contribution. It must suffice to say that Mr. Mummery has combined in this memoir instruction with entertainment in the very way in which a man who has his heart in his work combines them in his well-earned vacations; and that we recommend our readers to judge for themselves of the merits of his pleasant and practical pages."—(*Lancet.*)

"*Local Application of Sulphuric Acid in the Treatment of Carious and Necrosed Bone.* By George Pollock, F.R.C.S., Surgeon to St. George's Hospital.—Whatever will aid in the speedy and safe removal of dead or dying bone without instrumental interference must be a boon to the patient and an acceptable measure to the surgeon. There is, however, nothing novel in the proposal to hasten the separation of dead or dying bone by the application of a strong mineral acid. Every practitioner is aware of the chemical effect of the one when brought in contact with the other. Every pupil is familiar with the preparation of a bone deprived of its earthy particles, and rendered so soft and so pliable as to allow of its being bent upon itself, or of its being cut with a knife. But as a local application for the more speedy removal of dying bone, or for the more rapid separation of dead bone, or for the destruction of the surface of a carious cavity and the disintegration of all the diseased bone lying therein, sulphuric acid does not appear to have been so generally appreciated as it deserves, nor are its effects sufficiently known. It possesses the advantages of being a very simple and perfectly safe application for the purposes indicated; is thoroughly antiseptic when used as a dressing for foul, diseased bone cavities; is comparatively painless when applied to carious bone; and is seldom productive of any irritation in the surrounding soft tissues. * * * *

"In the number of cases which have now come under my notice, both in St. George's Hospital and in private practice, in no one instance have evil consequences been known to follow the application of sulphuric acid to diseased bone of any part of the body; nor has the treatment been found a painful one, when the acid has been used in a diluted form. If pain should follow the application, it usually lasts

but a short period; for the acid in contact with the bone soon becomes neutralized, and ceases to occasion uneasiness. When diluted, the acid does not usually affect the soft tissues, even to the extent of uneasiness; nor does it produce the slightest subsequent irritation in them The acid may be used pure, as in some of the instances quoted. Its application had better then be confined to caries or necrosis of the bones of the trunk when exposed or easily got at; and when it is desirable to destroy dying bone rapidly, or quickly to get rid of dead bone. The results of its application under such circumstances are very satisfactory; but for most other purposes, a mixture of acid with water, in equal parts, will be found sufficiently active and efficacious; and, for the removal of dead bone from the skull, I prefer it should not be used stronger, otherwise it might irritate the dura mater, should the lotion come in contact with it while being applied to the bone; for, in many of such cases, portions of the skull may already have exfoliated or been removed.

"If employed for the destruction of carious surfaces in cavities of bones, or deep-seated carious patches on the surface of flat bones—*e.g.* the pelvis,—it will be found very convenient to apply the diluted acid with lint, and either to stuff the cavity with the wetted lint, or lay the lint on the diseased patch; or the lotion may be used daily with a syringe. The former is, however, the preferable method of applying the acid, as its contact with the diseased surface of bone is most effectually insured, and for a longer period than if the cavity be merely syringed out with the lotion.

"On the second or third day, when the lint should be taken out, the cavity in the bone will be seen lined with an opaque white layer of tissue. In a day or two more this may be removed with a pair of forceps; it will peel off the surface of the deeper bone in the form of a more or less thick layer of tissue; it is, in fact, a soft slough from the surface of the bone, from which the phosphate and carbonate of lime have been largely if not entirely dissolved out. If on its removal there be still detected any rough surface of bone, the application of the acid should be repeated, and so often as any portion of exposed rough or carious bone is to be detected. Usually, as soon as one or two layers of slough have separated, healthy granulations commence to spring up from the surface of the bone beneath, and rapidly cover the living bone with a red velvety vascular tissue, which, growing daily, soon fills up the cavity, and closes the wound in the bone.

"When the acid is applied daily with a glass brush, or rod, to a necrosed portion of exposed bone, the latter will be seen to disintegrate and crumble away in very small, dry fragments, or may be picked off in minute pieces like friable mortar; or a thin layer may be scraped off in a moist condition, if the attempt is made soon after the application of the acid, and while the surface of the bone is still wet. While the process of disintegration is taking place, and the bone is becoming more porous, and perforated with numerous holes, healthy and abundant granulations are forming beneath, and may often be seen sprouting up in these apertures; so that as soon as any portions of bone are removed, or become detached, so soon is the part thus exposed seen covered by this healthy formation of granulations, ready to remedy and close the defect in the bone, and to assist in healing the external wound.

"In cases of exposed bone of the skull I have always preferred the

daily application of the dilute acid, rather than run any risk of too great and rapid an action by the use of the pure acid. Nor have I hesitated to use the lotion to the bone even when the pulsation of the brain through the exposed dura mater could be distinctly observed close to the edge of the necrosed portion. I have never in any single instance seen the slightest ill effects from the application of sulphuric acid to diseased bone. The more frequently I have used it the more satisfied I have been that it is one of the most valuable agents the surgeon has at his command to assist in the removal of dead bone and to set up healthy action in carious cavities or ulcerated surfaces of the long bones: valuable not only as perfectly safe when compared with the results of instrumental interference, but also expeditious when compared with the unaided efforts of nature. 'The formation of the groove between the dead and the living bone is a very slow process in the bones of the limbs, requiring generally many months for its completion.'* But by the application of the acid this period in many cases may be reduced to a few weeks, if care and attention be given to the treatment.

"Dr. Fitzgerald, of Dublin, has advocated and successfully employed caustic potash in the treatment of carious bone; and there can be no doubt of its advantages over the slow process of time, for it rapidly destroys the diseased portion, insures its more early separation, and a healthy granulating surface subsequently. But when tested by the side of sulphuric acid it appears to lack one essential possessed by the latter—viz., the acid does not affect or injure the soft tissues when used in the diluted form, although at the same time it acts chemically on the *diseased bone alone;* it does not affect the living bone, and its application is seldom followed by any great degree of pain.

"That, in the diluted form, it will only act on dead or diseased bone, and not on healthy bone, is a point of very considerable practical importance; and is the great advantage sulphuric acid possesses as an application, under the circumstances quoted, over the use of the gouge, or of the actual cautery, or of caustic potash. The following experiments, conducted at my request by Mr. Henry M. Noad, lately my clinical clerk, satisfactorily prove the correctness of this statement.

"Portions of dead, diseased, and healthy bone were selected and subjected to the action of sulphuric acid—viz.:

1. Dead bone: 10 grains.
2. Diseased bone: 10 grains.
3. Healthy bone; middle age: 10 grains.
4. Healthy bone; old age: 10 grains.

Exposed to the action of a mixture of sulphuric acid and water, one part in four, for three days, at a temperature of 100°, the following were the results:

"1. Dead bone: Phosphate of lime, 2 gr.; carbonate of lime, 3·30 gr.; dissolved in the mixture

"2. Diseased bone: Phosphate of lime, 2 gr.; carbonate of lime, 1·3 gr.; dissolved in the mixture.

"3 and 4. In both specimens of healthy bone, *no action took place.*

"The process of disintegration or dissolution, with the commencement of healthy granulation from the surface of the living bone, may be observed simultaneously progressing, in any exposed surface of dead

* Holmes' System of Surgery, vol. iii. p. 643.

or dying bone to which the acid may have been applied. When its action and effects are compared with those of the gouge, the bruising which is necessarily produced by the use of the latter, the pain and frequent subsequent inflammation, and, even under the most favorable circumstances, the time required for the rough lacerated surface to recover itself, throw off its small bruised fragments, and become covered with granulations, the treatment by sulphuric acid will be found far preferable. * * * * * * * * * * *

"The antiseptic qualities of the acid are no small recommendation to its use. The foul and offensive discharges so constantly accompanying diseased bone become at once altered in character by it, and in a short time all disagreeable smell usually ceases.

"My colleague, Mr. Pick, bears testimony to the advantages of the use of sulphuric acid as here recommended, in the following remarks, which I have much satisfaction in quoting: 'While holding the office of surgical registrar at St. George's Hospital, I had many opportunities of witnessing the treatment of necrosed and carious bone by means of sulphuric acid, and I was much struck by the very favorable results which were obtained. The first case in which my attention was specially drawn to the value of this remedy was that of a young girl who suffered from extensive necrosis of the skull, almost the entire calvaria being implicated, and in whom this treatment was adopted with the most beneficial results. And in commenting on this case, as well as several others of necrosis, in the annual *résumé* of the surgical cases in the St. George's Hospital Reports for 1866, I stated that "a solution of equal parts of sulphuric acid and water was applied to the exposed bone, with the effect of very rapidly dissolving it, and producing a healthy surface which soon cicatrized." Since that time I have had frequent opportunities of employing this remedy, especially in the strumous diseases of bones in children, and have been more than satisfied with the result. When applied to diseased bone, a rapid solution takes place, the bone becomes dissolved and melts away, and is thrown off in the discharge, leaving a perfectly healthy granulating surface, which quickly cicatrizes. As a rule, I apply the pure acid; and if care be taken in its application, so that nothing but the diseased structure be allowed to come in contact with the acid, the proceeding is perfectly painless. In a little girl who is at present under my care in St. George's Hospital, I have employed this treatment. She had been a patient for some time, and had undergone numerous gouging operations for extensive disease of the tibia, but with very little definite results. In August last I exposed almost the whole of the front surface of the tibia, by clearing off the soft parts; and having scraped the bone of all the diseased structures in front of it, commenced a steady course of the "sulphuric acid" treatment, applying the pure acid to the exposed bone freely twice a week. At the present time there remain only two small points of exposed bone; the greater part of the wound is cicatrized, the remainder being covered with healthy granulations.'

"I may, perhaps, be accused of being too confident in my views as to the beneficial effects of this treatment; but I am almost inclined to think that the early application of sulphuric acid rather tends to check the spread of caries or necrosis, as well as hastens the removal of the dead or dying structure. Furthur experience and experiment may throw more light on this point; but I trust I have produced sufficient

facts and arguments to justify the opinion I have formed, that the more extensive use of sulphuric acid as a local application in the treatment of caries and necrosis is deserving the attention of the profession."—(*Ibid.*)

"*Conservative Surgery.*—Dr. Bérenger-Féraud has undertaken, in the *Gazette des Hôpitaux*, a review of the published cases where mere shreds separated from various parts of the body have been successfully readjusted. The cases include partial or complete severances of portions of the nose, ear, tongue, fingers, hand, wrist, forearm, arm, and leg. These data, collected from many sources, and entailing a vast amount of trouble, will be extremely useful to those who wish to base their opinions of conservative surgery on actual facts. The first article appeared in the above-mentioned periodical of May 7, 1870, and will probably be followed by many others."—(*Ibid.*)

Cleft Palate Operations.—"Sir Wm. Furgusson remarks that, in operations for cleft palate, the removal of anything but a narrow strip of mucous membrane is unnecessary, and that the failure of the operation often depends upon the removal of too wide a strip—'a raw surface on each side being all that is wanted to secure adhesion.'"—(*Cincinnati Lancet and Observer.*)

Tumor of Upper Jaw.—Mr. Holmes exhibited to the Pathological Society (*Med. Times and Gaz.*) "a tumor of the upper jaw, on which he said he would court opinion. It grew in eleven weeks, and occurred in a woman aged thirty-five. It was first supposed to be an abscess of the antrum, and a tooth was drawn and the bone incised. No pus followed, but the growth increased rapidly, although the woman was in good health. It was neither vascular nor sensitive, but it implicated most of the jaw. It was removed by a single incision along the nose, and the patient was now nearly well. He thought it looked like a myxoma."

Nævus.—Mr. H. G. Croly said (*Med. Press and Circular*, Transactions of Surg. Soc. of Ireland) the treatment of this "was one of the most practical points in surgery. First, as regards the complete removal of the deformity; and next, the prevention of hemorrhage. The case he was about to bring under their notice was one of peculiar interest, inasmuch as the child had four nævi. It was four months old, and was brought to Dublin from the county of Cavan, and admitted to hospital on the 1st of November last. The first nævus involved the lower lip, and was almost as large as a middle-sized red plum—a hideous looking mass. The second was in front of the ear and in the course of the temporal artery. The third, or rather a double nævus, was on the back of the neck, and another nævus of the capillary form was on the tongue. When he first saw the child it was a most unpromising case. He expressed his opinion that it would be better to commence with the one on the lip, and the plan he adopted was by plunging a red-hot needle through it. The chloroform acted well. The child was perfectly still and suffered no pain. He then applied a cold-water dressing. The lip became very much swollen, and a week after the operation it presented a most unpromising appearance.

He repeated the operation eight or ten times, and at last the lip contracted, and instead of being an erectile tumor it became hard and lost its turgescence, except at two or three points. Each point where the redness was left he treated by getting the student to put in a red-hot needle. The lip was now restored to its natural condition, and he intended to get a photograph of the child and exhibit it to the society. He believed no other treatment except that by needles would have been successful in this case. With regard to the nævus on the left side of the face, the interesting point was that it began to ulcerate, and before the lip was well the other nævus was completely cured. In fact, the case without operation was far more complete than that by operation. The question was whether this effect was produced by sympathy, the structures being the same. At all events, the facts were, that the operation succeeded in the lip, and at the same time the other two nævi were cured by ulceration. The nævus on the tongue showed no disposition to extend into the organ."

Nævus.—At King's College Hospital (*Med. Times and Gazette*) "Sir William Fergusson tied two portions of a large nævus of rapid growth in the face of a child about fourteen months old. A patch the size of a crown-piece projected below the left eye, another and smaller portion at the inner angle of the orbit (these two were now tied with Sir W. Fergusson's knot), and the growth involved besides the superior maxilla, and appeared in the roof of the mouth as well as in the lip. Commenting upon the case, the operator said that vaccination of this nævus had been performed elsewhere, a practice which he characterized as 'quite a mistaken piece of weak silly Surgery, more fitted for a chamber dissertation than for practice in the theater—a practice which has very seldom done any good to the nævus and has, when so performed, not seldom failed in securing the far higher object which the vaccinator should have in view.' Sir William exhorted his hearers never to fail in early grappling with a growth which might eventually assume such formidable proportions, and stated that in his experience, although many means of treatment might succeed, he was most used to rely on the ligature of the growth *en masse* or piecemeal with the special knot used by him for this purpose. This plan, he said, very seldom failed, though even here one could not always insure success."

Syphilitic Infection by an Infant. Under the care of Dr. C. Drysdale, Metropolitan Free Hospital.—"E. C., aged fifty-three, a married woman, has had sixteen children, all healthy. She has (January 18th, 1870) several syphilitic patches on her tongue, and a large patch of psoriasis on the anterior part of the right leg. This patient makes the following statement:—'Two years and eight months ago my throat became sore, just about the time I had taken charge of a neighbor's child, which was covered with spots, and had the snuffles. I fed it with a bottle, which I often used to suck at myself in order to see if it drew well. I have sometimes seen my daughter give the child her breast to quiet it; her nipple became sore after it, and an infant of her own which she was suckling broke out into spots about two months afterwards, as did also my daughter, whose eyes likewise became red and sore. The child died of measles when three years old. My daughter had a second child, which came out in spots, and had sore eyes, and died at the age of nine months.'"—(*Lancet.*)

Salivation during Pregnancy.—Charles Williams, F.R.C.S., states (*Lancet*): "A woman in the Norfolk and Norwich Hospital, under the care of the late Dr. Ranking, secreted four pints of saliva in twenty-four hours. Every known remedy was tried locally and generally without effect. It ceased the day after her confinement."

—

"*Spontaneous Ptyalism.* By C. W. Knight, M.D., U.S.A., of Post Lampsasas, Texas.—On board the U.S. steamer 'New England,' at Havana, on the 3d February last, Mr. I. L. made me the following statement: Two days previously he had noticed that his mouth was unusually 'watery;' but he had not thought much of it until waking this morning he found his pillow and night-shirt saturated with saliva. He also said that he felt a 'little stiff and sore in the jaws.' He stated positively—and I place great confidence in his desire to tell me the entire truth—*that he had been taking no medicine of any kind*, with the exception of two Seidlitz powders, which I had given him to relieve a tendency to constipation. On examination I found the parotids slightly enlarged and indurated with increased sensibility to touch. The gums were swollen and moderately sensitive around the molars. The tongue looked healthy, with the exception of a little whitish fur near the base. The breath was offensive, resembling in odor that of the body of an uncleanly man. On careful inspection the teeth were found to be perfectly sound, and entirely free from any sharp edges that might act as sources of irritation. Being his messmate, I knew that his diet had contained a full allowance of fresh meats and vegetables. I had many opportunities for knowing that his health had been good in every respect, excepting that his bowels had been constipated, as previously mentioned.

"As treatment, I ordered a purge of rhubarb and jalap to be taken at once. Internally, a tablespoonful, every three hours, of a solution of potassæ chlor. of the strength of one drachm to the pint; this solution to be also used as a mouth-wash several times daily.

"*Feb. 4th.*—All the symptoms much aggravated. Parotids larger and more painful; gums hot, tense, and very sensitive; tongue coated; yellowish in the centre, whitish on the edges and tip, with indications of forming ulcers on the edges. Patient very nervous and irritable, and complaining much of pain at the angles of the jaw. Marked fetor of breath. ℞ Tinct. ferri subsulph., gtt. v every three hours; pulvis ipecac. comp. gr. x, twice in the day; continue the internal and local application of the potash solution, but of doubled strength.

"*Feb. 5th.*—Worse. Tongue much swollen, with ulcers in several places on its edges; between three and four pints of saliva poured out during the night; parotid and submaxillary glands, enlarged, hard, and painful. The patient's appearance is pitiable, and reminds one of the descriptions by old writers of severe cases of mercurial salivation. Ordered a nourishing diet, with a milk-punch, twice a day. Continued tinct. ferri subsulph., gtt. x, every three hours, and potash solution; Dover's powder *pro re nata.*

"*Feb. 6th.*—No change for the better. The ulcers on the tongue have run together, forming three large sores; an ulcer on each cheek as large as a silver dollar, with rugged edges, and of a dark reddish color; these ulcers present a very unhealthy appearance; ordered beef essence, with milk-punch; continue iron, omit chlorate of potash, and substitute a saturated solution of chloride of sodium, with which the mouth is to be

thoroughly washed *every half hour;* the ulcers on the tongue and cheeks being touched, in addition, three or four times during the day with a crystal of rock salt.

"*Feb. 7th.*—From the commencement of the chloride of sodium treatment the patient improved rapidly, the frequency of application being gradually decreased as the patient grew better. The tonic regimen was kept up for ten days. He was entirely well in two weeks.

"I desire particularly to call attention to the great relief experienced from the use of the chloride. At every application the patient said a cool and pleasant sensation was imparted to his mouth. He soon acquired the habit of keeping a small lump of salt in the mouth, and said it was as pleasant as a piece of ice to his parched tongue. The fetor of his breath was markedly controlled by the salt, so that the almost unbearable odor of the cabin was soon dissipated.

"I am unable to assign any cause for the complaint, unless the torpidity of his bowels can be charged with it. I have called it spontaneous ptyalism after Thomas Watson, who gives, in his 'Practice of Physic,' that name to a similar train of symptoms. The mode of invasion and the severity of the symptoms distinguish my case, I think, from mumps, or ordinary stomatitis."—(*Med. and Surg. Reporter.*)

Salt, Use of in the Organism.—"Salt is essential to the processes of digestion and assimilation: it aids the absorption of water into the system by the process of diffusion; it supplies the acid which the stomach requires for digestion; it gives soda for the formation of the bile and of pancreatic juice, and it helps the solution of albumen. In fact, it appears to be the *natural* stimulus to the digestive organs of all animals." —(*Chicago Med. Times.*)

"*Shut your Mouth.*—Prof. Tyndall's researches on 'Dust and Haze' continue to attract a great deal of attention, both in England and in this country. Scientific men are discussing them, and the popular press is making the most of the theme and its suggestions. The hygienic question of the hour is not what we shall eat or drink, but what —or rather *how*—we shall breathe. If the seeds of disease are everywhere floating in the air, and cannot be removed except by filtering it through fire or water, or some such substance as cotton wool, what is to be done? Shall we all put on 'respirators,' and go about like so many muzzled dogs? If the only alternative is death or that sort of disfigurement, all good-looking people at least will make their wills and resignedly await their doom. But fortunately we need not bandage our mouths with filters of cotton in order to escape the poison that lurks unseen in the air. Every man who has a nose has a natural 'respirator' which is all-sufficient for ordinary purposes. The breath of life was breathed into man's *nostrils*, as we read in Holy Writ, and through his nostrils, and *not* through his *mouth*, it was intended that he should breathe. Some ten years ago, Catlin, of Indian notoriety, published a little book (it is still in print, we believe), entitled '*The Breath of Life*,' which was a quaint but very sensible disquisition on the injurious effects of 'mal-respiration,'—that is, mouth-respiration. It ought to be circulated as a sanitary tract, and just at this time it would be likely to be generally read. Its text or motto is 'Shut your Mouth!' and, as the author urges, it ought to be inscribed 'in every nursery and on every bedpost in the universe.' It is unquestionably true that

people who live and breathe according to this simple law, are less liable to infectious diseases and pulmonary difficulties, than those who make the mouth the main organ of respiration. Catlin gives an account of a voyage he made between two South American ports, when thirty out of eighty passengers died of yellow fever. He says that careful observation satisfied him that, with scarcely an exception, the victims of the disease were those who habitually breathed through the mouth. In numerous other instances in which he was in the midst of yellow fever and cholera, he remarked the same general exemption from disease on the part of those who kept their noses open and their mouths shut. This is worth remembering, and our readers may be sure that, even if it does not benefit them, it certainly cannot harm them, to cultivate the habit of breathing through the nostrils, especially when exposed to a malarious or pestilential atmosphere. If, as Prof. Tyndall believes, ordinary air is never free from organic pollution, let us make fair trial of the nasal filters with which Nature has furnished us before we resort to any artificial contrivances for the same purpose. It will be both cheaper and more comely to shut the mouth than to muzzle it."—(*Boston Journal of Chemistry.*)

"*Carbònic Acid.*—At his last lecture, Dr. Richardson took for his subject some new and curious points relating to the physiological action of carbonic acid. After briefly describing the chief physiological facts ascertained since the discovery of carbonic acid, as a product of the respiratory process, by the illustrious Black, the lecturer proceeded to illustrate the effect of carbonic acid on animal and vegetable fluids. He said that his friend, the eminent chemist, Dr. F. Versmann, in studying the manufacture of some medicinal waters, had found, much to his annoyance, that when carbonic acid, with a little soda, was brought into contact under pressure with some vegetable infusions, the gas was fixed to a large extent, and the infusion was quickly transformed into a thick glairy fluid. Some infusion of orange and gentian treated in this manner was shown; the liquid was beautifully transparent, but glairy and thick, and, when transferred from one vessel to another, it turned out in a mass like albumen. This observation suggested to Dr. Richardson the importance of experimental inquiry as to the influence of carbonic acid on animal fluids, on the mucous secretion of the air-passages, on albumen, on serum, on solution of muscle, on fibrine, on blood, on blood-corpuscles, on bile, milk, and other animal secretions. He now showed some of his results, especially those relating to the precipitation of colloids. Albumen was shown as precipitated from serum, fibrine from a solution of muscular fibrine, and fibrine from a solution in blood. Next it was demonstrated that the blood-corpuscles by exerting a condensing effect on the acid prevented it by their presence from precipitating the colloids; and lastly, it was demonstrated that freshly-drawn defibrinated blood, subjected to carbonic acid under pressure, while it was rendered very dark by the process, on being exposed to the air at 60° Fahr. gave up the acid and seized oxygen in place of it with such avidity that a surface of blood a foot square was changed almost instantaneously from deep-black into bright-red arterial blood. Thus, the lecturer reasoned, carbonic acid on the blood side of the pulmonary vesicular surface is as important a necessity for respiration as is oxygen on the air side. Such are a few of the simple but interesting points of this lecture, of which we need

say no more now, since in due course it will appear in our columns in full."—(*Med. Times and Gazette.*)

Anæsthetic Mixture.—The special correspondent of the *Lancet* states that "M. Sauer, a surgeon-dentist of Berlin, after having performed various comparative experiments with anæsthetic substances, has come to the conclusion that the very best is a mixture of protoxide of nitrogen, chloroform, and atmospheric air. He considers this compound to be free from the dangers attendant on the use of either chloroform or the protoxide alone. The proportions which he advocates and employs are the following:—Liquid chloroform, six grammes; atmospheric air, three-quarters of a litre; and protoxide of nitrogen, sixteen litres."

Anæsthetics, their relative Safety.—From a careful examination of the statistics of 209,893 cases, Prof. E. Andrews gives in the *Chicago Medical Examiner* the following estimate of the relative danger from different anæsthetics:

Sul. Ether	1 death to 23,204	administrations.
Chloroform	1 " " 2,723	"
Mixed Chloroform and Ether	1 " " 5,588	"
Bichloride of Methylene	1 " " 7,000	"
Nitrous Oxide	No death in 75,000	"

Anæsthetic Properties of Carbolic Acid.—Dr. John McDowell says (*Medical Archives*) he has "found a strong solution of carbolic acid, applied to the cutaneous surface, a decided sedative or anæsthetic. After the immersion of his hands in a solution prepared for injection, in the dissecting-room, he had noticed a marked reduction of sensibility for some hours."

Death from Chloral.—The Paris correspondent of the *Chemist and Druggist* writes that "chloral is still in great favor with the Parisian doctors. The amount used is very considerable, as tolerably large doses are given, varying from half to three and even four grammes. This last, however, repeated three times during the night, effected the death of the patient, an argument in favor of its cumulative action."

"*Strychnine as an Antidote of Chloral.*—Liebreich, having discovered the therapeutical effect of chloral, has looked for and found the antidote of this powerful agent. From experiments he has instituted, it appears that strychnine, administered after a too large dose of chloral, cuts short and removes the effects of the latter, and this without producing its peculiar injurious action. Hence he proposes to avail himself of injections of nitrate of strychnia as an antidote in symptoms produced by an overdose of chloral or of chloroform."—(*Med. Press and Circular.*)

Alcohol favoring the Formation of Pus.—"According to Waller and the remarkable researches of Cohnheim, pus originates in the passage of the moderately enlarged white cells through the relaxed walls of the dilated blood-vessels. I have convinced myself by direct observation of the perfect accuracy of the statements of Cohnheim, though they are still contested by some investigators, and have elsewhere, though undoubtedly with another object in view, furnished a sketch of my own.

Alcohol induces dilatation of the capillaries of various regions of the body, but especially of those of the head, with great precision and certainty. And perhaps it may even be said that it causes dilatation of the capillaries throughout the body. If now there be already present a strong tendency to the formation of pus, it may be materially favored by the administration of alcohol. We may, perhaps, be allowed to attribute the injurious effects which now and again have been observed to follow the employment of alcohol to these actions. Alcohol holds a secondary position as an antipyretic as compared with quinine because the latter does not possess these disadvantages."—(Prof. C. Binz, *Practitioner* and *Cincinnati Medical Repertory.*)

—

"*Penetration of Capillaries by Pigment Cells.*—The wanderings or migrations of the white corpuscles, described by Cohnheim and Von Recklinghausen, from the interior of the vessels into the surrounding tissues, are now very generally, though by no means universally, admitted. To those who accept it as a proved fact, it accounts for many pathological phenomena, and notably for the formation of accumulations of pus and fibrin, with the innumerable exudations intermediate in character between these, with which all are familiar. To those who do not as yet admit the view that the white corpuscles can thus migrate, the principal difficulty is to conceive the walls of the capillaries as being so firm as to restrain the red blood corpuscles moving under the ordinary pressure of the blood, and yet so soft as to permit easy passage and egress to the white. An important piece of corroborative evidence in favor of the migratory view has recently been supplied by Dr. Saviotti, of Turin. This observer being engaged in studying the inflammatory process in the web of the foot of the frog, first obtained a circumscribed spot of inflammation by means of a drop of collodion, and after a few days found the pigment cells of the irritated spot accumulated around the vessels in a contracted condition, and in the course of a short time they had entirely disappeared. He immediately applied himself to the question of explaining the mode of their disappearance. In other frogs he excited inflammation by dropping on the web a small quantity of a 2 per cent. solution of sulphuric acid. Again, after a few days, he saw that the pigment cells had accumulated around the blood-vessels, and that, though they still preserved their contractility, their processes were less branched and numerous than natural. On further examination, he now observed that these processes began to penetrate the walls of the adjacent capillaries and small veins, causing an obstruction to the onward movement of the red corpuscles on their proximal side, while a clear space was observable on their distal side, occupied only by serum. And now one of two things occurred: either the process of the cell broke off, and was swept away by the blood current, or the whole cell gradually squeezed itself through the capillary wall (the part within the vessel becoming greatly attenuated and elongated) until it also was carried away. In the former case, the cell, shorn of part of its substance, still remained outside the vessel; in the latter, it of course disappeared entirely. As regards the time occupied in these phenomena, Dr. Saviotti finds that the cell processes penetrate the vessels in a period varying from three to six hours, and that it takes about the same length of time for the whole cell to follow and to be washed away from the internal surface, to which it long remains adherent.

"These observations seem to us to be of very great importance, as throwing light on the phenomena of absorption. Hitherto, we believe, the entrance of solid substances from without into the blood-vessels has only been noticed by Von Recklinghausen, but these observations are of so precise a character, and so easily capable of being repeated, that we trust they will stimulate other observers to further inquiry."—(*Lancet.*)

Anatomical and Functional Regeneration of the Spinal Cord.—MM. Masius and Van Lair, of Liege (*Monthly Microscopical Jour.* and *Lancet*), "have arrived at the remarkable result, from their observation, that the spinal cord of a frog can recover, in the course of a month, a loss of substance which has taken place in its own tissues, and repair its primitive anatomical and physiological properties."

Insanity and Neuralgia.—Prof. Henry Maudsley remarks (*Lancet*): "In some instances we observe a curious connection between insanity and neuralgia, not unlike that which, existing between epilepsy and a special form of neuralgia, induced Trousseau to describe the latter as epileptiform. I have under observation now a lady who suffered for some time from an intense neuralgia of the left half of the face; after the removal of a tooth suspected to be at the root of the mischief, the pain ceased, but an attack of melancholia immediately followed. Griesinger mentions a similar case of a gentleman under his care, in whom a double occipital neuralgia was followed by a melancholic state of mind. In his 'Commentaries on Insanity,' Dr. Burrows tells of a very eloquent divine who was always maniacal when free from pains in the spine, and sane when the pains returned to that site. And the late Sir B. Brodie mentions two cases of a similar kind: in one of them a neuralgia of the vertebral column alternated with true insanity. These cases appear to be instances of the transference of morbid action from one nerve-centre to another, such as Dr. Darwin formerly noticed and commented on. 'Mrs. C.,' he says, 'was seized every day, about the same hour, with violent pain in the right side of her bowels, about the situation of the lower edge of the liver, without fever, which increased for an hour or two, till it became quite intolerable. After violent screaming she fell into convulsions, which terminated sometimes in fainting, with or without stertor, as in common epilepsy; at other times a temporary insanity supervened, which continued about half an hour, and the fit ceased.' It seems not unreasonable to suppose that the morbid action in the sensory centres, which the violent neuralgia implied, was at one time transferred to the motor centres, giving rise to convulsive movements, and at another time to the mind-centres, giving rise to convulsive ideas. There is a form of neuralgia which is the analogue of a convulsion, and there is a mania which is the counterpart, in the highest nerve-centres, of neuralgia and convulsions in their respective centres."

"*Hypochlorite of Soda in Lead Poisoning.*—Operatives who work in the manufacture of the various salts of lead, especially white lead, and persons who use the many popular hair tonics containing sulphur and acetate of lead, have remarked the dark precipitate which forms on the skin and its annexes. This is the black sulphuret of lead, and is quite sure, after a time, to be absorbed by the skin and ultimately to

induce saturnine poisoning. Dr. Mehn, in a recent number of the *Bulletin de Thérapeutique*, recommends, to remove this deposit, a bath or wash of the hypochlorite of soda, a means easy of application and followed by prompt and immediate removal of the dark stains. He takes:

Dry chloride of calcium..13 oz.
Crystallized carbonate of soda..............................26 oz.
Water, about.. 3 gallons.

"Dissolve the chloride in the water, then add the soda dissolved also. A precipitate of carbonate of lime will be thrown down, and the supernatant fluid will be a solution of hypochlorite of soda. Add this to sufficient water for an ordinary bath, and pour in half a drachm of essence of lemon, eau de cologne, or other aromatic. The patient should remain half to three-quarters of an hour in the bath, or should wash with it those parts of the body darkened by the sulphuret."—(*Med. and Surg. Reporter.*)

Milk Preservative against Lead Poisoning. M. Didierjean. (*Comptes Rendus* and *Chem. News.*)—"The author, a red-lead manufacturer, states that, having taken all possible precautions to keep their workmen in a healthy state, he did not, however, quite succeed in preventing lead colics until, by a mere accident, it was found that two of their men were never affected at all. On inquiry being made, it turned out that they regularly took milk as drink at the time of taking their meals at the works. The owners of the works were thus induced to make the use of milk (1 litre daily) obligatory for their workmen while at the works; and, by exercising a proper surveillance, have succeeded, during eighteen months, of keeping, by this means, all their men free from any symptom of lead disease. The author states that he does not wish to exaggerate, but he vouches for the absolute correctness of his communication."

Silicate of Potassa for Solidifying Fossil Bones. M. Farez. (*Ibid.*)—"The author applies a concentrated (syrupy) solution of silicate of potassa, in order to lessen the risk of breakage and obviate the porosity of fossil bones to be preserved as specimens in collections."

Non-metallic Filling.—Mr. Napier read a paper to the Medical Society of London (*Lancet*) "'On an Improved Method of Stopping or Plugging Teeth,' and exhibited some specimens in which the cavities caused by decay were severally filled up with hippopotamus ivory, mother-of-pearl, and india-rubber, vulcanized to the consistence of ebony. Mr. Napier desires to obviate the necessity for using metal in any form for stopping teeth, and read this paper with a view to prove the importance of the object he advocated. He argues that one of the principal causes of chronic inflammation in teeth that have been stopped according to the method now in general use, is that metal is a readier conductor of heat and cold than the natural substance of which a tooth is composed. The improvements he advocated would benefit both operator and patient."

"*Carbolic Collodion.*—Dr. J. M. Hirsh, of Chicago, has published in a new Journal, *The Arts*, a description of the method of preparing his new mixture for stopping hemorrhage. Taking advantage of the astringent property in carbolic acid, which, even in dilute solution, will check the flow of blood, he prevents external coagulation—objectionable

on account of its liability to break off and allow the flow to commence anew—by adding to the carbolic acid or phénol, collodion, which almost instantly forms an artificial covering closely fitting the wound, so that coagulation has to take place within or beneath this coating. Ordinary collodion, which is a solution of gun cotton dissolved in ether, contracts greatly upon the evaporation of the latter, and frequently scales off. To obviate this, he uses glycerin, which has the property of rendering the collodion elastic. He finds that carbolate of glycerin is soluble in all proportions in collodion. The highly irritating and poisonous property of carbolic acid suggests that it should be used very sparingly in this compound."—(*Med. and Surg. Reporter.*)

—

Picric Acid for imparting to Ivory, Bone, and Horn a beautiful Red Color. C. Mène. (*Revue Hebdomadaire de Chimie* and *Chem. News.*)—After giving a short account of the well-known properties of picric acid, the author describes the process alluded to as follows: "Take 4 grms. of picric acid, and dissolve in 250 grms. of boiling water; add, after cooling, 8 grms. of liquid ammonia. Dissolve also 2 grms. of crystallized fuchsine (magenta) in 45 grms. of alcohol, dilute with 375 grms. of hot water, and next add 50 grms. of ammonia. As soon as the red color of the magenta solution has disappeared, the two solutions are mixed together, making a bulk of liquid amounting to about ½ litre, which is a sufficient quantity for dyeing from four to six sheeps' skins. Ivory and bone should be placed in very weak nitric or hydrochloric acids first, before being immersed in the ammoniacal liquid; wood cannot be dyed by this liquid, unless it has been previously painted over with paste made from flour. When, to the ammoniacal liquid, some gelatine solution is added, it may serve as a red ink which does not attack steel pens. By varying the proportions of the magenta and picric acid, the tints obtained may be varied from a bluish-red to a bright orange-red. The desired colors do not appear until the ammonia is evaporated."

—

"*Water-Glass as a Solvent for Coralline.* C. Puscher. (*Bayerisches Industrie und Gewerbe Blatt* and *Chem. News.*)—The author dissolves coralline in a boiling mixture of one part of concentrated water-glass (silicate of soda or potassa of the consistency of a thick syrup) and 4 parts of water, and, after cooling, applies this solution as a paint for wood (white woods containing little or no tannic acid), by preference, paper, toys, artificial flower tissues, etc., to all of which materials this solution of coralline imparts a beautiful carmine-red tint."

—

"*Steam-Engine for Domestic Use.* M. Fontaine. (*Les Mondes* and *Chem. News.*)—The author describes at length, and illustrates with several wood-cuts, this very useful contrivance. According to the description given, and the testimony of no less, already, than 100 owners of these engines, they are the most perfect hitherto brought out. It is stated, incidentally, that, with a consumption of 700 litres of coal-gas per hour, used as fuel (which is equal to 600 grms. of coal), $\frac{1}{10}$ actual horse power is readily obtained. This result, the editor of the paper states, is very satisfactory indeed, considering the very small toy-like size of these engines."

THE

DENTAL COSMOS.

NEW SERIES.

Vol. XII. PHILADELPHIA, AUGUST, 1870. No. 8.

ORIGINAL COMMUNICATIONS.

TREATMENT OF SENSITIVE DENTINE.

BY J. H. M'QUILLEN, M.D., D.D.S.,

PROFESSOR OF PHYSIOLOGY IN PHILADELPHIA DENTAL COLLEGE.

Without entering into a consideration of the reason why dentine is sensitive, but recognizing the fact that sometimes it is so exquisitely painful that patients are unable to submit to the necessary manipulation demanded in excavating and shaping a carious cavity, unless some agent is employed to obtund the sensibility, it becomes a question of some importance to decide what should be used.

Of the various remedies proposed from time to time as local applications to the sensitive surface, in *aggravated* cases they either fail altogether in alleviating the suffering, cause more pain than the instruments, or are attended by the most undesirable results.

Tannin or tannic acid, creasote, carbolic acid, carbolic acid and camphor, nitrate of silver, etc., in my hands, have not produced the slightest change in the character of the sensation when treating the extreme cases referred to, although these agents were used with the greatest care, and ample time was afforded to make the desired impression.

Chloride of zinc causes pain in the application as unendurable as the edge of an excavator, and even after that painful impression has been made, the dentine frequently remains just as sensitive as ever.

Arsenious acid is the most efficient and reliable local remedy in obtunding the sensibility that can be used; but the very great liability of destroying the vitality of the pulp makes the employment of this agent exceedingly questionable. The number of blue or black teeth which may be directly traced to such applications is disagreeable to think of, at least to those who find pleasure in looking at pearly white teeth, and experience a feeling of deep regret on observing one discolored tooth, destroying the harmony of a set which otherwise would be beautiful.

The unsatisfactory results obtained from these agents has induced many practitioners to rely upon a keen excavator and rapid manipulation in the removal of the decay. There are patients, however, who

will not, and some who cannot, submit to such heroic treatment, and would prefer to lose a tooth rather than go through such an experience.

In cases such as these, the employment of some agent which will make a general impression upon the nervous system, rendering the patient insensible to the operation, is quite as justifiable as the induction of anæsthesia in the extraction of teeth. Indeed, when comparing the two operations, the rapidity with which a tooth can be removed, and the tedious, long-continued, aggravating excavation of sensitive dentine, the latter, in some instances, becomes the most unendurable of the two.

The evanescent influence of nitrous oxide renders it unfit for such purposes. Ether would be much more reliable, and has been used by me in a few cases with the most satisfactory results.

The employment of the hydrate of chloral, lately, as a hypnotic, has suggested to my mind that this agent would serve a useful purpose in this direction. I have not tried it as yet, in such cases, but propose doing so on the first opportunity that offers, and will make the result known to the readers of the Dental Cosmos. In the mean time, others might experiment in the same way.

Quite recently I had a lady of a highly nervous temperament under my care, with cavities in the approximal surfaces of the upper and lower molars that were exquisitely sensitive to the contact of the excavators. The agents referred to in the first part of the communication were applied on several occasions, but with the most unsatisfactory results. Prof. Ellerslie Wallace suggested a hypodermic injection of a solution of morphia. This he made on the following day, in my office, just before renewing the attempt to excavate the decay. Although only one-twelfth of a grain of the morphia was used, the calming and obtunding influence upon the nervous system was quite remarkable; the patient submitting to the necessary manipulation, with very slight annoyance to her.

In operating for Prof. Stellwagen, whose teeth are exceedingly sensitive, he has frequently taken one-half and even three-quarters of a grain of sulphate of morphia with the happiest effects, during a period of two hours spent in the chair.

In conclusion, the very painful and aggravating character of the operation, the dread with which it is regarded by those who have gone through such an experience, or listened to the descriptions of some friend who has, frequently cause patients to delay or positively decline the performance of the necessary operations. These considerations, combined with the fact that advantage should be taken of every available means for the mitigation of suffering, are good and sufficient reasons why such agents as will act upon the nervous system generally should be employed under such circumstances.

PREVENTION BETTER THAN CURE.

BY ALFRED C. COGSWELL, D D.S., HALIFAX, NOVA SCOTIA.

During the past year several patients have inquired of me the cause of the corners of their mouths becoming sore and troublesome at times. In one case, especially annoying to a lady, I found she was wearing an upper set of teeth on gold plate, which had given her satisfaction for ten years. Thinking the quality of the gold might have something to do in producing the trouble, I tested the plate, and found it quite eighteen carats, of a fine yellow color, with every appearance of being a good and substantial piece of work. I then questioned her respecting the length of time this trouble had existed, and if before she wore artificial teeth. She seemed quite confident that previous to the impressions being taken for the denture nothing of the kind ever occurred, but at that time the operator had some difficulty in introducing the cup, and produced such severe laceration of the corners of the mouth that ever since trouble had existed; and the acrid saliva, coming in contact with the wounded parts, kept it constantly irritated. The natural tendency, voluntary and involuntary, to allow the tongue to moisten it at times, and the natural action of closing and opening the lips, prevented the parts from healing. At times she seemed to think it was quite well; but some article, such as salt, vinegar, or high-seasoned food, coming in contact with the part, would produce a smarting, burning pain, which caused her to avoid such articles, and also to avoid laughing as much as possible, as the extension of the lips naturally caused pain to the parts; and so accustomed had she become to contracting the mouth, that, if whistling-schools were fashionable for the gentler sex, I should have concluded she had practiced puckering as a specialty. These cases may, in a majority of instances, be readily healed by using tannin and glycerin as an ointment. The tannin acts readily on the gelatin of the skin, and forms a covering or cuticle like leather. Collodion may also be used quite successfully, if applied when the parts are quite dry. But would it not be well for every operator to use all the care possible in every operation about the mouth, to prevent any cause of complaint from their patients?

No trouble need exist nowadays in selecting proper-sized impression-cups, which are so admirably adapted as to size, material, and shape; whereas, when the impression was taken for the lady alluded to above, the operator used a cup made of tin, cut in pieces, and soldered together, leaving the edges quite sharp. Some of these cups I had recently in my possession, which were ill-looking compared to those of the present day.

In taking an impression, after the cup has been carefully selected to suit the mouth, and charged with such material as may be de-

cided upon, allow the mouth of the patient to be partly closed, sufficient to relax the muscles; then draw the cup a little toward the right hand. If for an upper set, allow the side of the cup to pass in first; then gently remove the lips on the opposite side, and the cup will slip in, without the slightest inconvenience or trouble to the patient. Its removal can be effected in the same manner, sideways—not by drawing the cup out at its full width, with the handle direct in the median line. The same plan will answer in taking a lower impression, only the position of the operator should be in front, and not on the side of the patient. In using plaster of Paris, warm a small portion of wax, and place it across the extreme portion of the impression-cup, allowing the assistant to keep it warm until the plaster be poured in; then proceed to take the impression of the upper alveolar ridge. It will be found that the wax will take the form of the mouth at the part it comes in contact with, and at the same time prevent the escape of the plaster around the soft palate and fauces, which so frequently causes gagging, and failure to obtain a good, reliable impression. It may not be amiss to add that care should be exercised in the use of plaster, to prevent it soiling the silks, satins, or broadcloths of those for whom we operate. This can be easily avoided by using a clean oil-silk apron made to tie around the neck of the patient, and to cover the garments. This will prevent, what might otherwise occur, particles of plaster falling and soiling the garments, which every one is aware is not so easily removed.

DURABILITY OF AN OXYCHLORIDE OF ZINC FILLING.

BY J. H. SMITH, NEW HAVEN, CONN.

In the June number of the Dental Cosmos appears an editorial article under the above heading, closing with a request that others would give their experience in the use of the material.

About six months ago a gentleman came to my office to have a tooth filled. I was about preparing gold, when he said: "What did you fill my teeth with a few years ago? I wish nothing better than that." On examination, I found a large oxychloride of zinc filling in a second superior molar; the cavity extending from the anterior portion of the tooth, including the buccal portion; in other words, more than one-half the tooth being gone.

The tooth was perfectly preserved, and the filling as smooth and hard as the day it was introduced, which, on reference to the books, I found to have been in May, 1861. At the same time I filled for him two bicuspid teeth, approximal cavities. These were also in perfectly good condition. The gentleman went West directly, and I had not seen him in the mean time.

The second case is that of myself. In 1863 Dr. A. Y. Paddock, of New York, who was then in my employ, filled a second left superior molar, posterior cavity, which is still doing me good service, the filling impaired only as I have cut away upon it now and then to demonstrate its solidity to some brother dentist.

Imperfect manipulation is probably the most frequent cause of oxychloride of zinc fillings becoming granulated and being washed away. My method of using it is to prepare the tooth carefully, keeping it perfectly dry, by the help of the rubber dam if necessary. The powder being previously placed upon a glass slab, fluid-bottle open, and several bits of bibulous paper in readiness, pour on the liquid, mix quickly with the spatula, and place in the tooth in a semifluid state before it has begun in the least to set. Press it against the walls of the tooth with bits of the bibulous paper, adding more of the preparation as is required, keeping it dry until it is thoroughly set.

There are one or two curious instances in which this material has proved useful. The marble spittoon in my office was broken more than four years ago. The pieces were put together and the outside plastered over with oxychloride of zinc. The spittoon has been in use ever since with running water, and does not leak. Also a pearl hand-mirror, whose handle proved recreant, and failed to be united by the usual methods, was made to do good service again by being fastened to the glass with oxychloride of zinc.

DURABILITY OF OXYCHLORIDE OF ZINC FILLINGS.

BY M. A. SPENCER, ORRVILLE, OHIO.

My attention was called to this subject by an editorial article in the June number of the Dental Cosmos.

I have been using oxychloride of zinc for filling teeth about *eight years*, and am convinced that it makes a much more durable filling, when properly manipulated and in healthy mouths, than most operators imagine.

Often when filling sensitive cavities, or cavities where the pulp was nearly or *quite* exposed, I have (for simple convenience) filled the cavities, and directed the patients to call as soon as the least imperfection in the surface of the filling was noticed, and have the same completed with gold.

In many of these cases I have examined the teeth occasionally for years, and never found it necessary to fill with gold.

In these cases the oxychloride does not granulate or soften, but remains perfectly even about the edges or margins of the cavity, preserving the tooth as well as gold. My experience with this material has taught me—

1st. That it is best to test every package received before using it in the mouth.

2d. That it is the best and safest filling close to the pulp, and that it will be found, upon the removal of a metallic filling with which it has been covered for years, in as good condition as when covered.

3d. That it should not be put into the cavity until it has begun to set or harden; then filled in rapidly, thoroughly consolidated, and immediately coated with some material (sandarac varnish is my choice) which will keep it perfectly dry for a few hours, when it will finish nicely.

4th. That the same precautions must be taken to keep the cavity and the material perfectly free from moisture as in filling with gold.

5th. That it cannot be relied upon as a permanent filling, except in the mouths of patients whose secretions are generally healthy; but for such persons it makes a better filling than any other material except gold.

I will just say in conclusion that, as in the case cited by Dr. McQuillen in the article already referred to, many of my patients, for whom this material has proved so durable, have been middle-aged or older persons.

PERIOSTITIS—A CASE IN PRACTICE.

BY M. A. SPENCER, ORRVILLE, OHIO.

Mr. F., merchant, aged about thirty years, nervo-sanguine temperament, of full habit, and in good health, called at nine o'clock P.M. and requested me to extract the second superior right molar, which he said had made him nearly crazy all the afternoon and evening. He said he had tried everything, without a moment's relief from the excruciating pain. Upon examination, I was surprised to find the tooth perfectly sound, as were all others on that side, except a slight tenderness upon percussion, which seemed to extend to all the adjacent teeth. I told him I could not consent to the extraction of the tooth, but would give him some medicine, which would relieve him quite as soon. After some persuasion, he consented to try the medicine, providing I would extract the tooth if it did no good, early in the morning, taking much pains to show me his lack of faith in any such treatment.

I gave him five grains third decimal preparation of mercury, and directed him to take two grains every half hour until he could sleep. He called on the following morning, to say he had found *entire relief* after taking three powders. Some months have passed, and there has been no return of the disease. I could mention many cases where this medicine has proved equally efficacious in my practice I am indebted to Dr. Chase for the formula.

METHOD OF SETTING A PLATE TOOTH ON A ROOT.

BY H. E. DENNETT, GLOUCESTER, MASS.

First cut the crown off; then tunnel out the root, by enlarging the pulp cavity, making it very large at the orifice, and smaller as it goes in, making retaining-points at proper places.

Solder a platina point to a suitable plate tooth, the point being large where it is soldered, and a gradual taper bringing it nearly to a point; then make it barbed or rough, so that it will not pull out after the tooth is set.

Having prepared the root and the tooth, put on the rubber dam; fill the root to the point where the end of the pivot will meet it; put on the tooth, and fill around the pivot (turning the tooth in and out, and laterally, as convenience requires, the pivot being easily bent without danger of breaking); build out to the natural form of the tooth, using first soft gold, then that which is partially adhesive, then adhesive. (See cut.)

[The writer of the above placed in my hands the root of a tooth, with a plate tooth attached, in the manner described. The operation was very skillfully performed, and the plan proposed is certainly preferable to building out a golden crown, which, however perfectly executed, cannot be said to add a charm to the smile of beauty, although it may prove useful in mastication.

Of late it would appear as if the profession had lost sight of the fact, that the highest evidence of art is that wherein it is so concealed, and simulates nature so nearly, as to deceive even acute observers. The aim now seems to be to bring the golden operations prominently into view, rather than conceal them from observation. A perfect tooth is more beautiful in the mouth than the most difficult contour filling ever introduced; and many teeth which have been filled in that manner would be quite as useful, and more sightly, if the gold had been less conspicuous. Recognizing the value of such operations, it would be well to bear in remembrance the old maxim, *utile dulci*.—J. H. McQ.]

TINCTURE OF ERIGERON IN ALVEOLAR HEMORRHAGE.

BY H. M. PERKINS, D.D.S., MIDDLEBOROUGH, MASS.

This very valuable remedy was brought to my notice by Prof. J. Foster Flagg, while attending his lectures in 1869 and 1870; and, having used it recently in several cases after extracting teeth, with gratifying results, I have thought that the following might be of interest to the readers of the Dental Cosmos:

Miss Kate S., aged 21, applied to a fellow-practitioner to have the

right inferior second molar extracted. After returning home profuse hemorrhage commenced, and continued for some time, when she applied to me for relief. I first applied Monsel's solution of persulphate of iron on a pledget of cotton, holding it in place for some time. Upon withdrawing it, however, the blood flowed the same as before. I then tried the oil of erigeron, and, as I thought, arrested the hemorrhage. Under that impression I dismissed the patient, but in the course of an hour or two she returned, bleeding as bad as ever. I then applied the tincture of erigeron, with marked success, and after a short time dismissed her, and heard no more from her for several days, when she came to the office and said that she had had no further trouble from hemorrhage.

A friend telegraphed to me the other day, saying, "I extracted a tooth for my wife last night, and she has been bleeding slowly ever since. What shall I do? Have used Monsel's solution and a dozen other remedies." I told him to use tincture of erigeron in the same manner, and in a few days I had a letter from him, saying "it was the best thing he ever used."

I would recommend its employment in all cases of this kind, as far superior to Monsel's solution.

OS ARTIFICIEL IN A NEW FIELD.

BY H. V. KAGEY, ARCOLA, ILL.

Long after a desired distance has been obtained in separating crowded teeth, we are generally obliged to continue the use of wedges for a longer or shorter period of time. And these, if not frequently renewed, will cause trouble. Now, in order to avoid this continual renewing, and evil if not renewed, I use oxychloride of zinc. Fill the space, obtained by previous wedging, with a small pledget of cotton, thoroughly saturated with the os artificiel. This, while soft, can readily be adapted to the different angles and surfaces of the teeth; and when once hard, will serve as a *prop* that will stay. Other advantages, as color, etc., will be apparent to all. When desirable to remove it, file as in separating.

MISCELLANY.

ABSTRACTS AND SELECTIONS.

BY. J. W. WHITE.

Dental Times.

Dr. J. F. Babcock, writing on "Valuable Failures," gives his experience with oxychloride of zinc as follows:

"Nearly one year ago, after reading in the various dental journals the different articles, pro and con, and hearing the subject thoroughly discussed in several Association meetings in Philadelphia and else-

where, I concluded to give the os-artificiel a fair and impartial trial as the 'savior of exposed pulps;' opportunities were not lacking, and in the course of six months I had treated some fifty (and here I stopped to see the effect), which, at the time of their presentation, were aching with different degrees of intensity. My first step in the operation was always to excavate as much of the decay as possible, taking particular care to remove any substance which might be acting as the immediate cause of irritation to the pulp, and then for the purpose of reducing the inflammation, I applied creasote upon a pledget of cotton, protecting *this* with cotton and sandarac; allowing the patient to go and return within forty-eight hours, when, if no pain had ensued, it was my practice to remove the evidences of the previous treatment, replacing a new and small pledget of cotton, slightly moistened with creasote, directly and lightly over the exposure of the pulp. I then proceeded to fill with the os-artificiel, taking care not to press it too tightly upon the point of exposure; the pain following this procedure would vary from slight to intense, and from two minutes to an hour's duration, when it would gradually cease and disappear altogether. I then dismissed the patients, with orders to return any time within two months that best suited their convenience, for the purpose of having the os-artificiel protected by a complete covering of gold, in order that it might not be washed away through the action of acids in the saliva.

"Everything 'went merry as a marriage-bell,' for, in response to inquiries, the answers would be, 'not a particle of pain;' 'the tooth never felt more comfortable,' etc. Took out some of the fillings and replaced them upon finding the pulp alive and apparently healthy. No case that I could find had proved, in the slightest degree, a failure, and I began to hope that the pulp had at last found a 'fellow feeling,' which was making it 'wondrous kind;' but, alas! for the fragility of human expectations, the storm has at length broken upon my unprotected head, and *fifteen* out of the fifty have made their appearance, *every single one* burdened with an abscess. How many more there are to come He alone can tell; but I confidently expect a call from all the rest eventually. None which have so far appeared showed any evidence of future trouble for at least six months after being filled, and most of said cases, especially those in the superior maxilla, I trust I have succeeded in saving, by treating the abscess with the proper remedies; at all events, they have yielded to them, and in all instances are doing well. So much for my experiments with oxychloride of zinc. In my hands, and I believe in many others, it has proved *worse* than useless; for had I originally, as is my custom, destroyed the pulp, extracted it, thoroughly cleansed the canal or canals, filled them, and in fact, *properly* treated the tooth, I should have been saved much time, expense, trouble, and vexation of spirit, but therein is my failure *valuable.* Oxychloride has its uses in dentistry, many of them important; but in my opinion *not* as a 'savior of exposed dental pulps.' *Why* not, I will endeavor to make clear in some future communication."

Dr. Arthur Ford gives his experience with the same material:

"I have used this capping extensively myself during the past two years, and will give my experience with regard to my success.

"I would premise by saying that I am a great advocate for preserving the vitality of every tooth wherein I have a shadow of a chance to

be successful; but until the introduction of the use of oxychloride of zinc, I must confess I had but ill success; but since, I have been remarkably fortunate; indeed, out of many cases, I know of but one that failed, and that was under very disadvantageous circumstances. I do not know whether my manner of manipulating may be the same as most others, so will give it somewhat 'in extenso.'

"First, I excavate the cavity perfectly, taking care not to touch the exposed nerve more than possible, then dry the cavity as much as practicable, without producing too great pain to the patient, and protect the tooth against all moisture; moisten a small mop of cotton with creasote, and wipe out the cavity carefully, but thoroughly, and having previously placed the chloride and muriate of zinc (separately) on a piece of glass on my stand ready, mix them to the consistency of putty (or nearly so); keep the mouth open with the left hand, guarding the cavity most jealously against moisture. I then fill the entire cavity, and still keep the mouth open some five to ten minutes; then warming some wax, cover the filling entirely with it, the object of which is to keep the oxychloride as long as possible from becoming very wet, and dismiss my patient for a week or two, at the expiration of which time I remove about two-thirds of the oxychloride, filling thoroughly with gold, or, in some molar cases, amalgam. This has been my uniform mode of treatment in such cases, and I am happy to say I have been eminently successful. I have three special cases under my eye for constant inspection—one filled about eighteen months since, another about a year, and the third about a month, none of which have given the least trouble since the introduction of the oxychloride, at which time there was, of course, some pain, though of short duration, nor can I discover any indication of decreased vitality. I am so well satisfied with this mode of treatment, that I firmly believe it is the only true way in which a pulp can be capped with any certainty of success."

Dr. Hasbrouck makes the following suggestions for "Continuous Gum Work," which, properly constructed, he considers "the most perfect thing in the way of artificial dentures that has ever been produced:"

"The plate, for a practical case, should be about No. 28, by gauge and the French platina is preferable on account of its being smoother, brighter, and less likely to have cracks and fissures in it than that which is made from scraps and rolled out. The plate should be swaged in the same manner as an ordinary metal plate, being careful to keep the base metals from it in annealing. Get the articulation the same as in any case, and the teeth can be placed in most any position required. After they are arranged on the wax as desired, it is well to put plaster enough around the outside to hold them firmly in position while being backed and soldered.

"Then invest in plaster and asbestos, first putting a stiff platina wire across the heel of the plate to keep it from warping or springing while being baked. The backing should consist of about three separate pieces of platina, and cannot be too stiff or strong; solder with pure gold. It should not be soldered in the furnace, as the teeth will be very likely to be etched and spoiled by overheating while in the investment.

"Heat them to a cherry-red in the furnace, and then melt the solder with the blow-pipe. After cooling off, remove the investment, taking care to preserve the base with the wire in it to bake the piece on after-

ward. Put the piece in acid to remove the borax, and then wash thoroughly with soap. The case is then ready for the body. After the first coat, the cracks and fissures caused by the shrinkage must be carefully filled, and it will come out of the furnace the second time smooth and ready for the enamel, which can be put on thick or thin to suit the case, and shaded as desired.

"The baking and furnace-work is the most difficult part, and can only be learned by practice. There are many little annoyances that the beginner has to put up with, and gasing is perhaps the worst one. If it is heated up too fast it will snap and fly. If the case is gased, it is ruined, and might as well be made over at once. It will look blue, and be rough and spongy. A little practice and instruction from any one who understands it will enable one to overcome all these difficulties."

Dental Register.

Dr. Taft says, "Use Heavy Foils:"

"Yes, in almost every filling, varying, however, in each case, in the proportion of heavy foil with the light, Nos. 4 or 6.

"With our present experience, we prefer Nos 30, 60, and 120.

"In almost every filling, we use No. 4 for the foundation, and indeed for filling up from two-thirds to three-fourths of all deep cavities; then filling the remainder, and finishing with heavy foil. In ordinary cavities the whole filling may be made with heavy foil, No. 30 or 60, the former is preferable for the beginning. The form, size, and location of a cavity to be filled should always determine the precise form of the material to be used.

"In the use of heavy foil, the aim should always be to place it upon the receiving surface, as smooth and free from wrinkles or crimping as possible, and so condense it. In large cavities, the foil should be cut, so that it would lay with a plain surface when introduced, except that, perhaps, it may be well to have the pieces slightly larger than the cavity in order that they may curve up a little against the wall. Heavy foil is far more easily condensed than light, and the receiving surface more easily retained.

"When a filling is brought up well-nigh to the orifice of the cavity, heavier foil may be used, and the pieces may be made larger than the diameter of the orifice, so that when it is condensed all over the surface there will be a portion to fold over and consolidate against the border. By this method of manipulation, a far more solid and perfect margin can be made to the filling than is usually made with thin foil, and the adaptation to the border of the cavity can also be made more perfect.

"This method, also, renders it an easy matter to bring up the margins of a filling more rapidly than the central portion, which is oftentimes desirable in medium and large cavities on the masticating surfaces of the molars.

"The formation of contour fillings is much easier with heavy than with light foil, and the welding is far more perfect with proper manipulation."

From a paper on "Anæsthesia," read before the Southern Dental Association, by Dr. J. G. Angell, we copy the following theory of the action of general anæsthetics:

"The brain is divided into four grand divisions: the cerebrum, gov-

erning the mental faculties; the cerebellum, governing co-ordination of motion; the pons varolii, governing instinctive sensation, and the medulla oblongata.

"From these four grand divisions arise nine pair of nerves, which are named according to their functions, and are numbered according to their exit from the cranium, as follows:

CEREBRUM.

"1st. Olfactory, arises in the fissure of Sylvius, and is distributed to the Schneiderian membrane. Nerve of smell.

"2d. Optic, arises from the thalamus opticus and tubercula quadrigemina, and is distributed to the retina. Nerve of sight.

"3d. Motor oculi, arises from the crus cerebri, and is distributed to the muscles of the eye, except the external rectus and superior oblique.

"4th. Patheticus, arises from the valve of the brain, and is distributed to the superior oblique.

PONS VAROLII.

"5th. Trifacial, arises from the pons varolii, and is distributed to the orbit, eyelids, conjunctiva, forehead, teeth, masseter, buccal, pterygoid, and temporal muscles.

"6th. Motor externus, arises from corpus pyramidal, and is distributed to external rectus muscle.

"7th. Facial and auditory, distributed to internal ear, and muscles of face and neck.

"8th. Pneumogastric, glossopharyngeal, and spinal accessory, distributed to muscles of respiration, etc.

"9th. Hypoglossal, distributed to the tongue.

"Anæsthetics, when administered through the lungs to a sufficient extent, paralyze the nerves—that is, impair their power of performing their natural functions, by their action upon the brain. Affecting, 1st, the cerebrum; 2d, the cerebellum; 3d, pons varolii; 4th, the medulla oblongata, and thus the nine pair of nerves in the order in which they are numbered. Consequently, in administering an anæsthetic, its influence may extend entirely over the first three divisions, and partially over the fourth, without any serious result, provided we do not trespass too far upon the fourth.

"Now, the question arises, How are we to judge how far the brain is brought under the influence of the agent, and how can we trace its effects upon the nerves without risking the life of our patient? Certainly not by the pulse, for that may not vary a single beat to the minute; not by stertorous breathing, for in many cases that is wanting; neither in the quantity inhaled, for what would scarcely affect one patient would kill another; nor in the time the system is under its influence, for operations, in my own experience, have varied from ten minutes to nine hours, but it is the face we must rely upon as the only true index. Why the face? Because the first seven of the nine pair of nerves that originate in the brain have branches distributed to muscles of the face, and, as has been remarked, when an impression is made upon one end of a nerve, as its origin, it is instantly communicated to the other, its point of distribution. * * * *

"The first nerve that will be anæsthetized, of the nine pair, is the olfactory—diminishing, and finally depriving the patient of the sense

of smell; this is indicated by the patient remarking, that it is not strong enough; they cannot smell it; to replenish the napkin. Under such circumstances, pay no attention to what they say, but tell them to take a full inspiration, or breathe 'hard.' Let them understand you have full confidence in yourself, and know what you are about. When the sense of smell is deadened, you may know the cerebrum, as far as the fissure of Sylvius, is anæsthetized, as the olfactory nerve originates at that point.

"The 2d, 3d, and 4th pair of nerves, and the cerebellum, will be affected in turn, as will be observed by the dilation of the pupil, contraction of the iris, and loss of co-ordination of motion. At this stage there is still general sensibility and instinctive winking. To overcome these it is necessary to anæsthetize the pons varolii and part of the medulla oblongata, to the origin of the 7th pair of nerves. Then an operation may be performed without pain on any part of the body. If, on presenting the finger to the eye, the patient winks naturally, the pons is only slightly affected; if the winking is slow, it is gradually coming under the influence of the agent. At this stage the patient will act as if intoxicated. If the patient is spoken to, it should be in an undertone or whisper, as the chorda tympani of the 5th, and portio mollis of the 7th, are much excited, and the hearing is much more acute than when they are in a normal state. If the eyelids refuse to twinkle in response to tingling of the eyelashes with the finger, the pons is overcome, and the patient is in a condition to have the operation performed.

"If the anæsthetic is continued until there is a relaxation of the muscles of the face, and all expression is lost, the 7th pair, which arises in the medulla oblongata, has succumbed to its influence. This is as far as it will be safe to advance, as we will then be verging upon the origin of the pneumogastric or 8th pair, which is the nerve of respiration; if that is paralyzed, the lungs will cease to act and death will ensue.

"In extracting teeth it is not necessary to go beyond the pons, the origin of the 5th pair, as they furnish the dental nerves. This will be indicated by the relaxation of the muscles of the extremities, and the eyelids failing to respond to the tingling of the eyelashes with the finger."

Canada Journal of Dental Science.

Dr. Beers writes on "Vulcanite Combinations" as follows:

"The exclusive use of either red, black, or pink rubber, as a base for artificial teeth, has its separate objections. Certain objections to the red may be removed by the use of the brown or black, but the color of these is a strong argument against their use with many patients. The pink compounds would seem to fill the void; but all the light shades of vulcanite are inferior in strength and durability to the red or black, having a much smaller percentage of caoutchouc, and a larger amount of earthy matters or metallic oxides, used to tone down the original color. In 100 parts of the best English pink, there is a percentage of 60 parts of fixed matter, while in the best red and black there is, in 100 parts, only from 3 to 6 of this objectionable foreign matter. The consequence is, that the worst colors are the best for all purposes. The following is the method I use for obviating the separate objections referred to, while combining any separate excellence they possess:

"Put a sheet of red or black rubber in boiling hot water, and, when softened, pass it through rolling-mills until it is reduced to half its usual thickness. It is better to cut the sheet in two longitudinal strips previous to rolling, as the rolling widens the sheets, and it is liable to catch and tear at the sides. If, for instance, the case is an upper set, make a paper pattern of the palatine surface of the model, keeping it at least a quarter of an inch from the pivots of the teeth, and the back part where the plate is to terminate. Cut the red or black rubber to correspond with this pattern, and place it on the palatine surface of the model, over the air chamber. Now take strips of pink rubber and pack them regularly under the pivots as the teeth lie in the flask. Cut a piece of pink rubber a quarter of an inch wider in circumference than the red piece, and place it properly in the part of the flask containing the teeth. Pack red rubber around the pivots, and sufficient pink elsewhere to prevent the red oozing through, and wherever it is necessary. The result, of course, is that you have red vulcanite for strength on the upper palatine surface, where it does not show, and pink on the lower or visible surface. Nothing makes a handsomer 'rubber' set, than the two layers combined. In preparing the set for the flask, I always alter the wax to come up high to the back of the crowns of the teeth, so that the depression thereby caused in the plaster will accommodate sufficient pink rubber to prevent any red passing through. The wax model should be smoothed as much as possible, and every precaution taken to avoid much use of the bur when finishing.

"I think the above method is better for all purposes than the entire use of pink rubber, as it makes the upper palatine surface of the plate the most durable, and the lower surface the most beautiful."

Missouri Dental Journal.

Dr. Chase finds that the use of heavy foils necessitates a change in the weight of the mallet:

"About two years ago I was glad to exchange my light wooden mallet for one weighing about seven ounces; and this I continued to use until I had become accustomed to the heavy foil. As I continued to manipulate the latter, I found that a much lighter blow was required for condensing them than for the light foils, and I changed my heavy mallet for a steel one, which weighed but three and a half ounces. I found this still too heavy, and going back to the original light wooden mallet, I find that I have a better blow than from the heavier instruments.

"In the use of adhesive foil we only wish to condense the surface of the plug; only to condense and unite the last piece of foil to the previous surface; and any force exerted for this purpose greater than is necessary to produce the desired result, is an injury to the plug, endangers the enamel at times, and is unpleasant to the patient.

"A pellet of No. 2 adhesive foil requires a heavier blow to make it cohere to a plug surface than does a strip of No. 30 or No. 60.

"Dentists who use cylinders must use a heavy mallet to condense them on their distal surfaces, and as I use cylinders nearly every day I find my seven-ounce mallet none too heavy for the work. In this case I wish to condense not only the surface of the cylinder next to the plugger, but its opposite exterior surface also. There is, in these cases,

a comparatively large mass of gold to be condensed, and the blow from the wooden mallet makes hardly any impression on the cylinder, excepting on the exterior portion touching the plugger.

"I am satisfied that I shall continue to use the heavy foils, 30 and 60, until there is something new and better to take their places. No. 30 is still my favorite for the mallet and No. 20 for hand pressure. Strips and squares are the forms in which I use those numbers, as has been before described in this journal."

British Journal of Dental Science.

From "Notes from a Case Book," by S. Hamilton Cartwright, we select the following:

"My first contribution is a case of obstruction of the duct of Steno, a complication often met with in connection with the duct of Wharton, but rarely in connection with that of the parotid gland. Mr. Erichsen maintains the theory that all this class of tumors have their origin in those cystic formations which occur so frequently in other secreting glands The difference of opinion existing concerning the pathology of this disease makes this case particularly interesting, and I think that it may be satisfactorily proved, in opposition to the theory above mentioned, that in this example dilatation of the duct existed.

"*Case.*—Some short time since a man came to the hospital to seek relief for a swollen face, the left cheek being the part affected. On opening his mouth no condition of the teeth warranted the assumption that the swelling was in any way connected with disease in them, excepting that the second molar tooth had caused swelling, inflammation, and subsequent ulceration of the mucous membrane by the contact of its fagged edge (the tooth being partly decayed on its buccal surface) with the cheek, the ulcer thus created being the *fons et origo mali*, from which he wished to be relieved.

"On questioning the patient about the swelling, he said that it had come on gradually, and on examining it with the finger, distinct fluctuation was perceptible. The priority of the existence of the ulceration and the *subsequent* formation of, and the *gradual* increase in, the calibre of the swelling, militated against the idea that it was the result of acute inflammatory action, and led to the conclusion that the fluid contained in it was not purulent. My diagnosis was that this was a case of obstruction of the duct of the parotid gland occurring, primarily, as the result of swelling in the tissues surrounding its entrance; inflammation, secondarily, taking place along its course, this being the result of the attendant irritation and ulceration created by the rugged edges of the molar tooth.

"*Treatment.*—The offending tooth was at once extracted, and the ulcerated surface on the mucous membrane of the cheek was touched with nitrate of silver, while I gave the man a lotion composed of sulphate of zinc and myrrh, directing him to rinse out his mouth with it thoroughly four or five times daily. The application of the nitrate of silver instantly removed all sensitiveness, and the patient was directed to return again in two days.

"When he returned the ulceration had nearly disappeared, and the attendant swelling also, but the tumor was rather increased in size than otherwise. On examining the parts again I found the tumor pressing

against the buccal surfaces of the teeth, taking its origin *posteriorly* to the orifice of Steno's duct opposite the second molar tooth, being in a direction parallel to and across the duct as it lies between the masseter and buccinator muscles. Fluctuation was still plainly perceptible. After searching for and discovering the orifice of the duct, I attempted to pass a small silver probe into it; but, after passing this to the extent of less than a quarter of an inch, an obstruction to farther progress presented itself. Against this I pressed the probe, the adhesions yielding in some degree to the pressure. I then cut upon the probe along the partially obliterated duct into the tumor. About ℥ss of albuminous fluid escaped into the mouth through the incision, and the swelling instantly subsided. Next, wishing, if possible, to restore the integrity of the duct, I passed carefully a piece of silk moistened with carbolic acid through its orifice, and brought it out at the opening, through which the fluid had been evacuated, tying its ends together loosely, directing the man to call again the next day. On seeing him again, not the succeeding day, but some two or three days afterward, I found the tumor reappearing, because the thread having been removed, the opening I was attempting to establish had become partially closed again. I again passed the probe through where the artificial opening had been made, and then squeezed out about ʒss of serous fluid which had recollected in the sac, and passed a piece of oiled and twisted wool into the opening. This treatment I pursued for some time, the patient coming very regularly. On each occasion of his advent I also passed my probe into the opening, which ultimately remained pervious, so much so that when the man last called all traces of disfigurement had entirely disappeared.

"*Remarks.*—This case seems to prove that a ranula, or a tumor partaking of the character of one, may result from *dilatation of a duct.* Mr. Erichsen, in speaking of this disease, says 'that it is not easy to understand how so small a duct can be dilated to so large a size as is occasionally attained by these tumors,'* and he suggests that all such cases are really *cystic* in their character, as are certain fluid-containing tumors which are found beneath the mylohyoid muscle and in other parts. In this example the swelling seems to have been indubitably owing to *dilatation* of the duct, no traces of cystic formation, or even of phosphatic calculi in it, being present. The pathology was probably something of this kind—the terminal extremity of the duct became primarily occluded by the occurrence of inflammation, and consequent swelling in the tissues surrounding it. Next the inflammation reached the duct itself, ultimately causing adhesion between a portion of its parietes; thus the glandular secretion being deprived of any means of exit, it accumulated until the duct became dilated into the tumor which I have attempted to describe.

"If this view of the pathology of the subject be not incorrect, it is clear that ranula may depend on simple dilatation of a duct, and in reference to this conclusion I must beg you to call to mind to what a great extent the ducts of the mammary glands become enlarged in sarcoma of a sero-cystic nature; and, indeed, with regard to that same class of malady of which I have just been treating, Mr. Coote mentions a case of ranula under the care of the late Sir William Lawrence, in

* Science and Art of Surgery, pp. 883, 884.

which after cutting into it, that gentleman actually inserted his finger into the duct as it pursued its course toward the submaxillary gland. Doubtless there are cases which are cystic in their origin, but a more extended range of data can alone prove the typical character of these obstructions, and I trust that it may not be long ere other opportunities of research present themselves, by aid of which we may obtain elucidation of the truth."

AMERICAN JOURNAL OF DENTAL SCIENCE.

In the Miscellany for April we gave a selection from a lecture of Prof. Noel on "Enamel and Dentine," embodying his "conclusions." In the April number of the *Missouri Dental Journal* Prof. Judd reviews these conclusions, to which Prof. Noel replies in the June number of the *American Journal*, from which we quote:

"Finally, this writer says: 'If we were asked to furnish evidence that enamel was not dead—perfectly dead—we would point to the fact, that it is many times exceedingly sensitive to the touch, and that sensibility is one of the most certain signs of vitality wherever it exists. Can any one give as good a reason for supposing it dead?'

"1. It is an assertion unproven, to say that enamel in *itself* is sensitive; it has neither nerves nor fibrillæ.

"2. If *sensitiveness* should be the test of vitality, then enamel is only *vital* when it shows *sensitiveness;* and when it does not show it, why, it must be *dead*.

"3. Sensitiveness is not one of the most certain signs of vitality wherever it (vitality) exists, nor wherever it (sensitiveness) exists, (sentence capable of each construction, and wrong in each); a sporule of mildew, a grain of wheat or of corn, or any vegetable seed, may germinate, grow, etc., but is there any sensitiveness about this or about any vegetable growth? And in the first few weeks of human embryonic life, when not an animal system has yet been evolved, but the organic life is active indeed, there cannot be sensitiveness, for there is no nervous system, yet here is an abundance of vitality; *so there may be vitality without sensitiveness.*

"'*Extreme sensitiveness*,' is nearly allied to *pain*, and Dr. Thos. K. Chambers, of London, in his excellent lectures upon the 'Renewal of Life,' says: 'Pain, in short, is the brother of death; a painful part is never performing its whole vital functions—it is partially defunct.'

"It is therefore the best evidence of some kind of lesion of the peripheral nerves or nerve centres, and indicates disease; *pain, extreme sensitiveness*, and *sensitiveness* are attached to, and depend upon, the nervous system, but have no relation, save an incidental one, to the functions of organic life.

"Enamel has no nerves, and usually no fibrillæ; dentine has fibrillæ which act as nerves; the sensitiveness of dentine depends upon its fibrillæ; if enamel should *ever* be '*extremely sensitive to the touch*,' it is from a deranged condition of the *dentinal fibrillæ* accidentally prolonged into the enamel. Calcified enamel and dentine are dead.

"It is with no spirit of hypercriticism that I have made the above defense, but to sustain and advance the opinions which a most careful study of the histology of the present day justifies my holding."

PROCEEDINGS OF DENTAL SOCIETIES.

STATE DENTAL SOCIETY OF PENNSYLVANIA.

The second annual session of this body was held at the Board of Trade Rooms, in the City of Pittsburg, commencing June 21, 1870.

The 1st Vice-President, Dr. G. B. McDonneld, presided; the President, Prof. T. L. Buckingham, being absent.

Members present.—Drs. A. B. Robbins, Saml. Welchens, Geo. W. Neidich, Jno. McCalla, J. G. Templeton, W. N. Amer, J. Z. Hoffer, E. M. Pierce, Geo. B. McDonneld, M. H. Webb, and G. T. Barker.

Dr. Jno. McCalla was elected a censor, to complete a majority of the board.

The following delegates were admitted to membership, viz.:

From the Lake Erie Dental Association.—Drs. W. E. Magill, C. D. Elliott, C. B. Ansart, S. Davis, C. H. Bagley, G. J. Luce.

From the Pittsburg Dental Association.—Drs. M. E. Gillespie, James S. King, James Orr, H. W. Arthur, James D. White.

From the Harris Dental Association.—Drs. D. R. Hertz, J. S. Smith, and A. F. Herr.

Dr. James S. King, on behalf of the dentists of Pittsburg and vicinity, welcomed the members in an address, which was responded to by Dr. Samuel Welchens for the society.

The Committee on Legislation reported that they revised the bill, removing such features as they considered objectionable, and urged its passage by the Legislature; they advanced a step over last year, in having it reported from the Executive Committee to the House, but it failed in its passage there. The Committee feel encouraged to continue their application, and recommend an appropriation to defray all necessary expenses. Report accepted and committee discharged.

A new committee was appointed to prosecute the work, consisting of Drs. Robbins, McCalla, Moffitt, and Martin, with power to draw upon the Treasurer for all necessary funds.

The amendments to the Constitution, proposed by Dr. Robbins at the last annual meeting, were considered, and the first amendment adopted, viz.: "That Art. XI. be amended by substituting 'the members present' for 'a full quorum.'" The second amendment, viz.: "Any member of the State Dental Society, in good standing, may, upon passing a satisfactory examination by the Censors, with the approval of the society, receive a certificate constituting him a '*Fellow of the State Dental Society of Pennsylvania*,' under seal, signed by the Censors, President, and Secretary," was ordered to lay over for reconsideration until our next meeting.

On motion, Gettysburg was chosen for the place of our next annual meeting.

At the request of Drs. W. A. Breen and M. Lukens Long, their resignations as members of this society were accepted.

Dr. G. T. Barker described a method of using rubber by which the hard-rubber patent might be avoided. He uses soft rubber, or rubber partly vulcanized, for the plate; the teeth being secured by arches of tin, fastened to the pins, and extending around the inside of the teeth.

The experience of those who were using whalebone rubber was called for, and several members spoke of it as an improvement over the ordinary rubber.

On motion, the dentists, physicians, and clergy of the city were invited to attend the sessions of this body.

An essay was read before the society by Dr. McCalla, on "The Extraction of Teeth," giving a description of the most approved instruments of the present day, and the proper performance of the operation.

The discussion on the subject of the essay was opened by Dr. Magill, who considered simplicity in instruments, and as few a number as possible, desirable; approved of a low chair, and considered position everything; wants to be master of the situation; does not recommend lancing except for going through the process, and then makes a vertical incision only.

Dr. Barker said the operator should study the law of forces; did not think strength so necessary as a correct application of the force; considered the upward force one of the elements of success; the alveolus should be crowded out of the way; advocated but one instrument when practicable, particularly when administering anæsthetics.

Dr. Gillespie said, while general rules might be given for the performance of the operation, yet there are cases which must be decided upon at the time by our good judgment; he thought lancing not generally necessary, except at the posterior part of the wisdom teeth; advocated Physick's forceps for those teeth.

Dr. Robbins thought, in connection with this subject, we should discuss "when to extract."

Dr. Magill presented a case of what he had considered neuralgia, but which resisted all remedies for that disease. After extraction, it proved to be a case of ossification of the pulp. He asked the society for their experience in regard to symptoms of neuralgia, exostosis, and ossification of the pulp.

Dr. Barker stated that pain from exostosis is never permanently relieved by topical applications; sometimes temporarily by cold water; wished the society would stigmatize the wholesale destruction of teeth; thought the wishes or present feelings of the patient should not be considered.

Dr. Barker offered the following resolution:

"*Resolved,* That it is the judgment of this society that no teeth

should be extracted that by proper treatment may be made serviceable to the patient."

Adopted by the society.

Dr. J. G. Templeton read an essay on "Mechanical Dentistry," giving the different methods, and their advantages in making artificial dentures.

Dr. Barker described the different varieties of palatine defects, and his method of obtaining impressions for the purpose of constructing appliances to remedy them ; uses a piece of sponge as a holder for plaster; fastens to it a piece of wire ; saturates the sponge with the batter of plaster, and takes the impression in one piece.

Dr. Luce described a method of using aluminium as a base; gets up the plate in the same manner as any other metal case ; arranges the teeth on the plate, and waxes up the case as for rubber; puts in flask, separates, removes wax, drills holes in metal plate underneath the blocks and pins, countersinking well on under side ; packs, and finishes ; sometimes covers the plate entirely.

Dr. Barker said the process was similar to that of Dr. Brown's, only he used fusible metal instead of rubber; thought both objectionable on account of the secretions getting between the teeth and plate. He exhibited an aluminium plate soldered ; strikes up the plate, arranges the teeth, and finishes up with wax, and inserts in flask ; separates, leaving plate in lower flask, same as Dr. Luce ; scrapes plate carefully where solder is applied ; removes plate, and melts solder on it without flux, by holding over spirit-lamp, same as tinned iron ; pours solder around pins in upper flask, after heating the flask ; flasks closed, and set away to cool ; gates are cut to allow excess to escape.

A letter was read by the Secretary from Dr. B. T. Whitney, President of New York State Dental Society, asking for our co-operation in their endeavors to establish a degree, etc. Ordered to be placed on file, and to be answered by the Corresponding Secretary.

An essay was read by Dr. Geo. B. McDonneld, on "The Treatment of Exposed Pulps," advocating in the strongest manner the preservation of the pulps alive.

Dr. Robbins inquired for definite information as to the best substances for covering the pulps ; or whether, and under what circumstances, it was best to cap nerves ; whether it was best to rely on local treatment or combine constitutional with it?

Dr. Gillespie was eclectic in his practice ; sometimes succeeds with one material, sometimes with another, but was content if he succeeded in a large portion of the cases ; uses carbolic acid as a preliminary application ; prefers oxychloride of zinc.

Dr. Robbins thought the pain occasioned by applying the oxychloride of zinc might be obviated by using a weaker solution of the fluid.

Dr. Barker considers the use of carbolic acid an element of success; believes in a strong solution of the chloride of zinc.

Dr. James S. King has had considerable success in the capping of nerves; uses creasote, and then applies the oxychloride of zinc; thinks creasote preferable to carbolic acid; uses *pure* creasote; thinks pure creasote difficult to obtain; thinks 95 per cent. of exposed pulps can be saved; a great deal of success depends on the proper consistency of the paste; sometimes treats for a considerable time before filling; thinks in the worst cases there is a chance of success, and considers it our duty to use the chance; thinks gutta-percha not so good as oxychloride.

Dr. Barker thinks it impossible to obtain *pure* creasote.

Dr. Neidich thinks success almost certain in good subjects, and recent exposure; thinks pressure, or the forcing of foreign substances through the apertures, is the cause of most failures; considers gutta-percha equally as good as oxychloride of zinc, perhaps a little more difficult to apply without pressure, but not so painful in its application; does not think there is any difference in the action of creasote and carbolic acid; thinks the pulps in good subjects have sufficient recuperative powers to close the opening if protected from thermal influences and external irritants; has seen cases closed by secondary dentine, or calcification of the pulp, without the aid of art; does not believe inflammation of the pulp ever terminates by resolution.

A public address was delivered on Wednesday evening, on "The Advantages of Association as a Means of Improvement," by Dr. Samuel Welchens.

Thursday morning being set apart for clinical operations, and the presentation of cases, instruments, mechanical appliances, etc., Dr. Barker described a case upon which he proposed operating, viz., the filling of a compound cavity in a right superior second molar, anterior and grinding surfaces, extending somewhat beneath the gum; some recession of pulp and deposition of secondary dentine. Dr. Barker operated under difficulties, not being familiar with the chair, instruments, foil, etc. He commenced his operation on three retaining points at the cervical wall, having protected this part by wedges; used No. 8 gold for the anchorage and floor of the cavity; then, successively, Nos. 20, 60, and 120; his assistant, Dr. C. H. Bagley, using an ounce and a half tin mallet.

A case was presented of necrosis of the inferior maxillary bone; patient aged 55; greatly emaciated by the excessive discharge of pus; had submitted to several operations which had failed on account of not being thorough. The treatment recommended was the use of good nourishing diet and frequent cleansing of the parts; the chances being in favor of the removal of the sequestrum.

A case was presented of a young lady, of good health, aged 17, suffering from an osseous or cartilaginous tumor, caused by the unskillful extraction of an inferior molar tooth. It was evidently associated with an abscess depending upon the presence of the root of a tooth The treatment proposed was the removal of the root, and the application of an ethereal solution of iodine—a saturated solution of iodine in ether—the application to be made both externally and internally.

[*The report at this point refers to the exhibition and illustration of new forms and styles of instruments and teeth, which in accordance with the rule (governing the* DENTAL COSMOS *since its first publication) to exclude matter referring to private interests, has been transferred to our advertising pages. See first page Advertisements.*—PUB.]

The following officers were elected, by ballot, for the ensuing year, viz.:

President.—Dr. Jno. McCalla, Lancaster, Pa.

1*st Vice-President.*—Dr. J. G. Templeton, New Castle, Pa.

2*d Vice-President.*—Dr. M. E. Gillespie, Pittsburg, Pa.

Recording Secretary.—Dr. C. H. Bagley, Meadville, Pa.

Corresponding Secretary.—Dr. Samuel. Welchens, Lancaster, Pa.

Treasurer.—Dr. G. T. Barker, Philadelphia, Pa.

Assistant Recording Secretary.—Dr. C. B. Ansart, Oil City, Pa.

Board of Censors.—Dr. A. B. Robbins, Meadville, Pa.; Dr. W. E. Magill, Erie, Pa.; Dr. James D. White, Pittsburg, Pa.; Dr. Geo. W. Neidich, Carlisle, Pa.; Dr. Geo. J. Luce, Titusville, Pa.

The President, with the approval of the society, appointed the following committees, delegates, essayists, etc.:

Executive Committee.—Drs. A. B. Robbins, Geo. W. Neidich, W. Nichols Amer, J. Z. Hoffer, G. T. Barker.

Publication Committee.—Profs. G. T. Barker, J. H. McQuillen, T. L. Buckingham, Drs. James S. King, C. H. Bagley, Samuel Welchens, W. N. Amer.

Delegate to New York State Dental Society.—Dr. W. E. Magill.

Delegate to Ohio State Dental Society.—Dr. J. S. Smith.

The President and Secretary are authorized by the society to issue credentials to any six members who will attend the meeting of the American Dental Association.

Essayists.—Drs. Samuel Welchens, Geo. T. Barker, Geo. W. Neidich, Geo. J. Luce.

On motion, adjourned to meet in Gettysburg, on the second Tuesday of June, 1871, the session to continue three days.

GEORGE W. NEIDICH, D.D.S.

CONNECTICUT STATE DENTAL ASSOCIATION.

The Connecticut State Dental Association held its sixth annual meeting in the lecture-room of the Yale Medical College, New Haven, commencing Tuesday, May 17th, 1870.

The following gentlemen were elected officers for the ensuing year:

President.—Dr. H. L. Sage, of Bridgeport.

Vice-President.—Dr. J. Woolworth, of New Haven.

Corresponding Secretary.—Dr. J. Cody, of Hartford.

Recording Secretary.—Dr. C. A. Powers, of Hartford.

Librarian.—Dr. James McManus, of Hartford.

Treasurer.—Dr. E. E. Crofoot, of Hartford.

The following were elected to represent the State at the Nashville meeting of the American Dental Association: Drs. Woolworth, Dunham, Powers, Cook, Buckland, Sage, Gaylord, Strang, Rush, Swift, Stevens, Parmlee, Snow, and Mallett.

The attendance at the sessions was thirty members, resident in the State, with the following distinguished members of the profession from adjoining States: Prof. J. H. McQuillen, of Philadelphia; Prof. Wm. H. Atkinson and Drs. C. E. Francis, of New York; Geo. A. Mills, of Brooklyn; and J. J. Anderson, of Springfield, Mass.

First subject—"Treatment and Preservation of the Deciduous Teeth."

Prof. Atkinson would advise, first, that, as early as is practicable, they be carefully polished. The friction of mastication polishes the cutting points, and these surfaces are bright and hard; it is near the gum that they commence to roughen and break down. If pains are taken to carefully polish off the membrane of Nasmyth, as it is called, the tendency to decay is warded off. Where decay has progressed, these teeth must be prepared and filled as seems best in each individual case. There will be many cases where Hill's stopping or preparations of a similar character will seem best; often oxychloride of zinc will answer, and very often the best filling that can be introduced will be an amalgam filling. Patience and gentleness are the requirements in the treatment of this class of patients.

Second subject—"Methods for the Preservation of the Dental Pulp."

The use of oxychloride of zinc was reported (as usual for some time past) the popular article in the estimation of the experimenters in this direction.

Prof. Atkinson read a paper on "Differentiation," which we cannot pretend to give a synopsis of that would do justice to the author, other than to say that, commencing with the simplest combinations of the elements, he demonstrated that out of the chaotic and formless, the lower types were first produced, and then by a slow and gradual evo-

lution, and an ever-increasing differentiation, higher and more perfect types of existence were produced. The law of differentiation was applied to the mineral, vegetable, and animal kingdoms, and to the varying conditions of human society. The paper, illustrated by a large chart, was listened to with decided interest by the members of the association.

Wednesday, at 11 A.M., Prof. J. H. McQuillen delivered, by special invitation, a lecture on "Voice and Speech."

In opening, the speaker said, viewing the subject from the stand-point of comparative anatomy, it was found that in animated nature provision had been made, in most instances, by which one individual can hold communication with another, through the production of sounds on the one part, and by the hearing of them on the other. In this way, when the opposite sexes are some distance from each other, or the young are separated from their parents, they can communicate with each other. Important service is thus rendered in the propagation of the species, and the preservation of the individual.

In invertebrated animals, insects for instance, the hum of the bee, the shrill note of the mosquito, etc., the sounds induced are not vocal or articulate, but are due to the action of the muscles of the wings producing an alternate pressure upon, and relaxation of, the tracheal tubes where they terminate opposite the stigmata. A brief description of the manner in which the characteristic sounds are produced by the locust, termite or white ant, anobium, grasshopper, etc., was then given.

In the air-breathing vertebrata, various modifications of the vocal apparatus are presented, commencing with the most simple, and gradually ascending to the complex organs of man. Animals possess voice. Man alone enjoys the faculty of speech or articulated language. Thus reptiles can produce only a hiss, frogs a croak, which rises in crocodiles and alligators to a roar. The bleating of the sheep, the bellowing of the bull, the braying of the ass, and the neighing of the horse, are due to modifications in the vocal organs, which, presenting their highest development in man, enable him, by his superior mental endowments, to enchant his fellows with the charms of eloquence, and the rich modulations of song. A correct appreciation of the vocal organs of man and their functions can only be acquired by comparison with those of animals. At this point was presented a careful description of the larynx. The cartilages composing the larynx, the muscles moving them, and the vocal membranes were illustrated by means of recent and carefully dissected specimens of the larynx of man, the cow and sheep, large drawings and papier-maché models of the mouth, nasal fossæ, pharynx, and larynx.

In the production of *voice*, the air in its passage from the lungs through the glottis throws the inferior vocal membranes into vibration; the *sound* thus created in its exit by the vocal tube, the mouth and

nasal fossæ, is modified by the tongue and lips, and speech or articulated language is produced by man. Articulate sounds are divisible into

1. *Vowels*, or open sounds, the smooth, harmonic emission of sounding breath modulated but not obstructed by the organs of speech.

2. *Consonants*, or shut sounds, made by either complete or partial contact of the parts of speech more or less obstructing the sounding breath. They are so named because they are sounded in connection with a vowel or another consonant. The clearness and distinctness of the articulation of the consonants is dependent not merely upon the action of the tongue and lips, but the condition of the hard and soft palate. A fissure in this, due to congenital malformation or tertiary syphilis, is attended by the most unintelligible utterance. Fortunately, however, by the efforts of Stearns, Kingsley, Bogue and others (particularly Prof. Kingsley), artificial palates have been constructed, enabling such unfortunate beings to speak distinctly.

Irregularity in the position of the natural teeth, or badly decayed and broken teeth, modify to a marked extent the sound of the consonants. Objectionable as this is in ordinary conversation, it becomes still more so in the public speaker. In the too free use of the file and chisel between the front teeth, spaces are frequently formed, which, when the air is forced through them, frequently produce a noise that is very unpleasant to the ear, particularly in sounding the letter *s*.

Imperfectly adapted dentures, continually falling or requiring constant action on the part of the tongue to keep them in place, or teeth arranged in such a manner as to cramp the movements of the tongue, necessarily interfere with distinctness of speech.

The above is an imperfect sketch, that does not mention a number of important points connected with the physiology of voice, the quality and range of the voice in speaking and singing, etc., which were carefully described in an address occupying an hour and a quarter in its delivery, and listened to with marked attention.

The following gentlemen were appointed a committee to co-operate with the committee of the State Medical Society, and other authorized committees, with reference to the erection of a monument to the memory of Dr. Horace Wells, the discoverer of anæsthesia: Drs. Jas. McManus, John M. Riggs, of Hartford, and J. Woolworth, of New Haven.

Petitions numerously signed, and from sixty towns in the State, have been presented to the General Assembly of the State now in session, and it is hoped, and confidently believed, that an appropriation will be granted. It is the intention, if aid can be procured, to erect a monument worthy of the great discovery and the discoverer.

In due time an appeal will be made to the members of the dental and medical professions for subscriptions for this purpose.

Adjourned to meet in New Britain, the third Tuesday in October, 1871.

ODONTOLOGICAL SOCIETY OF NEW YORK.

A SPECIAL meeting of the society was held at the residence of Dr. E. A. Bogue, New York city, on Thursday evening, May 19th, 1870, for the purpose of meeting Prof. McQuillen, of Philadelphia. A large number of the profession from this city and Brooklyn was present. The meeting was called to order by the President, Dr. C. E. Francis, who introduced the gentleman.

Prof. McQuillen, after expressing himself highly gratified at meeting so many of his professional brethren, alluded briefly to his visit to the Connecticut State Dental Society in New Haven, and then in an eloquent manner proceeded to advocate the right of Dr. Horace Wells as the discoverer of anæsthesia,—warmly supporting the claim as justly due him, the more warmly as he was a dentist, and that to a member of the dental profession belonged the honor of first bringing this great boon to suffering humanity before the world. The dentists of Connecticut were very much interested in the movement, and he would be glad to see the Odontological Society support it. He closed by thanking the society for the cordial reception given him.

On motion of Dr. Northrop, the President was empowered to appoint a committee to draft suitable resolutions setting forth the claims of Dr. Horace Wells as the discoverer of Anæsthesia.

Drs. Northrop, Marvin, and Bogue were appointed as this committee.

Prof. McQuillen said that he had heard and read a great deal of late about heavy gold; as yet he had not experimented with it. The experience of the past with annealed gold, sponge gold, shredded gold plastic gold, etc. had invariably led him back to soft foil, Nos. 4 and 6, and made him exceedingly cautious about taking up with new things and trying experiments on patients. He was, however, ever ready and glad to receive information and instruction from those in whose skill, judgment, and integrity he had entire confidence. Knowing that several of his New York friends had been engaged in testing this matter in private practice and at weekly clinics, he expressed a desire to hear something from those present who had been using heavy foils. The President called upon—

Dr. Perry, who expressed himself highly pleased with the results he had obtained from the use of them, particularly with No. 40, calling attention to its exceeding softness, and the comparatively light pressure required in packing it.

Dr. Bogue never used it in the bottom of cavities, but had used it as a veneering, and as a mode of rapidly filling the centres of large cavities, and had produced admirable results, using No. 60, folded three and four times in the manner of an accordeon bellows when closed.

Dr. W. H. Allen had used from 480 down, and the farther down he

got the better he liked it; thought he could produce just as good results with thin foil as with thick; folds his thin foil, and does not crumple it, for the surface of his fillings; up to the present time has the most confidence in thin foils, and thinks that many who are so enthusiastic over thick foils will come to a different conclusion after a time.

Dr. Varney had not used much heavy foil, but found some advantages in it, the main one being the fewer welding surfaces; thought that many who use it exclusively would find the same results which follow the use of crystal gold.

Dr. Marvin had not used heavy foils, and had heard no convincing arguments in favor of them; did not think they were any safer to the frail walls of a cavity than light foils; did not see that greatly solidified fillings were an advantage. The *good* fillings which we made in years past were good enough and solid enough. He could not see how heavy foils were more easily adapted to the walls of cavities than light ones.

Dr. Bogue spoke warmly in favor of heavy foils, which he has been using quite freely of late.

It was evident, from the drift of the discussion, that the advocates of heavy *foils*, as they were termed, had especial reference to rolled gold, and not to beaten. There were specimens of the former exhibited, ranging from 60 to 480, with a peculiar and very beautiful surface, which possessed a softness hardly to be realized except by the operator. This is mentioned because nothing of the kind has ever before been produced with this peculiar surface, to which is due its wonderful welding properties. C. F. Ives, *Secretary*.

SIXTH DISTRICT DENTAL SOCIETY OF NEW YORK.

The second annual meeting of the Sixth District Dental Society was held at the Court House in the city of Binghamton, Tuesday and Wednesday, May 31 and June 1, 1870. Dr. McCall in the chair. There was a larger number present than at any previous meeting.

The following gentlemen were elected members: Drs. Alvin Pease, E. A. Mayor, H. C. St. John, H. R. Scott, F. S. Howe.

Delegates to the American Dental Association, Drs. Hoysradt, Pease, Mayor, and Darby.

F. T. Maybury, M.D., an honorary member of the society, read an essay, on the subject of "The Relation of the Medical Profession to the Dental."

Meeting opened for discussion.

Dr. Walker asked for remarks on extracting teeth; said the opinion

of the dentist often conflicts with that of the physician; asked, when shall we extract in bad cases of inflammation?

Dr. Burr was not prepared to answer definitely; said when the mouth was badly inflamed it did not always answer to extract, for fear of the inflammation terminating in gangrene; but thought if the tooth was so far gone as to be a cause of continual irritation, the sooner removed the better.

Dr. Walker. Does a state ever exist when the inflammation is so great as to render the operation of extraction dangerous?

Dr. Brooks. The grand principle of surgery is, always to remove a cause of trouble when possible. Therefore we should remove any foreign substance when a source of irritation. A tooth could be considered a foreign body after it was dead, and especially when suppuration had been established.

Dr. Pease. Have practiced twenty years, and my rule has always been to remove teeth, no matter how great the inflammation at the time, if they are the cause of it, and cannot be saved by treatment.

Dr. Snook presented a paper on "Salivary Calculus." He gave the chemical analysis of different kinds; thought its general cause was an abnormal condition of the saliva; nothing should be attempted toward a cure until all deposits have been removed, which sometimes requires three or four sittings; it was the duty of every dentist to urge upon his patients the necessity of being more thorough and particular in keeping the teeth clean.

Dr. Walker always made an effort to remove all deposits.

Dr. Burr said there was no doubt that tartar was a deposit from the saliva; any abnormal change might cause it, or anything that would excite the secretion, for the greater the flow of saliva, the more the tartar; tobacco, for instance, increases the flow; therefore we may look for more calculus in the mouths of chewers.

Dr. Snook. Does tobacco really cause an increase of tartar?

Dr. Walker. It does; have seen many cases where it was quite evident.

Dr. St. John don't think tobacco will increase the deposit, but if anything, it will prevent it.

Dr. Seymour thinks it is not the amount of saliva that causes the deposit, but rather something that will induce a surplus of mineral matter.

Dr. Basset thinks Dr. Seymour right. More tartar is found in the mouths of women than in men, which shows very plainly that tobacco is not a cause.

Dr. Brooks. Calculus is due to a state of the system. Tobacco may cause it, as many other irritants do, by deranging the stomach.

Dr. Bassett. Do you find much tartar in mouths where the teeth are perfectly sound and healthy?

Dr. Holmes. Yes; some of the worst cases. He has long since discarded the use of myrrh in treatment; uses chloride of zinc in all cases very successfully, applied to the gums with hair-pencil, after the tartar is removed—eight grains to one ounce of water. Thinks anything that will increase the flow of saliva will increase the deposit.

Dr. Walker thinks more extensive deposits are found in mouths where caries exists.

Dr. McCall found more calculi in the mouths of women than men.

Dr. Hodge does not think tobacco is always injurious to the mouth, but is opposed to its use upon general principles.

Dr. Mayor. When inflammation exists in the mouth, more tartar is present.

Dr. Darby read a paper on "Diseases of the Gums."

Dr. Holmes said the subject was so thoroughly treated that little could be added. He spoke of carbolic acid as a remedy in general inflammation of the gums; thought there was nothing better. He said that when treating epulis, all diseased bone must be removed to effect a permanent cure.

Dr. Hodge agreed in the use of carbolic acid; had used it for some time, with the best results.

Dr. Walker believed in treating chronic ulitis with strong sage tea; to one pint of it, add nit. potassa and sup. carb. soda, of each a teaspoonful. A little honey added is good; thought free bleeding very essential, and lime-water an excellent remedy when the saliva was acrid.

Officers for the ensuing year were elected, as follows:

President.—Dr. A. M. Holmes.

Vice-President.—Dr. G. W. Hoysradt.

Recording Secretary.—Dr. C. A. Perkins.

Corresponding Secretary.—Dr. Frank B. Darby.

Treasurer.—Dr. H. Hodge.

Censor.—Dr. S. H. McCall.

Dr. Hoysradt introduced the subject of filling teeth. He thought soft foil made the best filling; said we ought always to instruct patients after operating—impress it upon their minds that without care and attention the fillings would not last.

Dr. McCall said he had used the heavy foil in connection with the finer numbers; thought it worthy of attention, and advised every dentist to give it a fair trial.

Dr. Walker was a strong advocate of heavy foil; said it was of better quality than the finer numbers; time could be saved and better fillings made with it.

Dr. McCall exhibited a set of Varney's points, which he considered the best in the market.

Dr. Holmes also presented a set of pluggers, of his own make, which were very good and practical. By request, the doctor gave his method of tempering instruments, as follows:

For pluggers—Heat the instrument to a heavy red, and plunge into water; then place the points in a shallow tin dish, and cover with sperm oil; ignite, and allow the oil to burn until nearly consumed. This gives a very tough spring temper.

For excavators and chisels—Heat and plunge into water, same as pluggers; then polish, and place the end of the instrument on a block of iron to protect the extreme points; throw a small flame, with the blowpipe, on the instrument until a straw shade appears, and gradually draw the flame back until you temper as far as desired; then plunge into water.

Dr. McCall gave some practical instructions in using rubber dam; generally adjusted the rubber before excavating, using a bulb syringe to blow the particles from the cavity, instead of water.

Dr. Darby asked why some gold fillings should discolor, while others from the same gold, and in the same mouth, did not?

Dr. McCall thought it must be a peculiar acid secretion from the gums at that point.

Dr. Hodge had seen two or three such cases, and agreed with Dr. McCall as to the cause.

Adjourned to meet at Norwich, Chenango County, September 28 and 29, 1870. Frank B. Darby, *Rec. Secretary.*

BRADFORD AND SUSQUEHANNA COUNTY DENTAL SOCIETY.

The fourth semi-annual session of this society convened at Wyalusing, Bradford County, Pa., June 14th, 1870. The President, C. S. Dusenberry, in the chair.

Essays were read by Drs. Dusenberry and Newell; that of the former treating of the "Uses and Abuses of Artificial Teeth," while that of the latter discussed the "Relative Merits of the different Materials for Fillings."

After a short but interesting discussion of several important subjects relative to the profession, the meeting adjourned to assemble at Le Raysville, Bradford County, Pa., the second Tuesday in June, 1871.

N. B. Smith, *Secretary.*

CLINICAL REPORTS.

CLINIC OF DR. J. E. GARRETSON, UNIVERSITY OF PENNSYLVANIA.

REPORTED BY DR. DE F. WILLARD.

Wednesday, May 25th, 1870.

Epithelioma of Lip.

Two male patients, aged respectively sixty and fifty years, present themselves, afflicted with large and indurated ulcers, situated between the inferior labial centre and commissure. They have come to our

clinic for the twofold purpose of learning the character of these ulcerations and for treatment.

Observing either ulcer (and they are precisely alike), you will remark that the edges are jagged and the bottoms granular. You will also perceive, by taking the parts between your fingers, that they are quite solidly indurated.

Were these ulcers upon the penis, and their bottoms pasty instead of granular, one would pronounce them Hunterian chancres; they certainly have very much the appearance of such chancres.

These ulcers are of some time standing, and have no tendency to self-improvement; on the contrary, they grow daily worse. Each patient also complains of sharp, lancinating pains in the vicinity, and of a sense of continuous stiffness and discomfort.

Unhesitatingly we pronounce them as belonging to the class "Epithelioma;" and more than this, we can say, for we may feel assured that they belong to the carcinomatous type, and are therefore malignant. An ulcer or tumor coming justly under the head of epithelioma, is not necessarily to be esteemed as cancerous in its character, for the term is rightly used for many diseases of the epithelial tissue.

A wart or a corn is a species of epithelial hypertrophy; yet it is seldom indeed that such growths are other than benign. An epithelial carcinomatous degeneration appearing upon a mucous surface is usually ulcerative in character, while upon the skin it takes the form of a tumefaction or tumor, or again, at the juncture of skin and mucous membrane, as in the case before us, assumes a compound nature.

An epithelial cancer seems to me to have, primarily, a strictly local signification, the general system being secondarily implicated, differing thus markedly from the encephaloid type, where the local disease seems but the concentrated manifestation of a pre-existing constitutional taint.

I do not know that I am right in these premises; many very experienced and learned men hold different views; still, I express what seem to be just deductions warranted by my own experience.

It certainly has been my good fortune to treat successfully many cases of epithelial carcinoma, while I do not think I have ever cured a case of encephaloid cancer. Epithelial cancers present themselves in two forms, which differ widely as far as prognosis is concerned.

In the first, the disease seems strictly circumscribed, the parts immediately adjacent feeling and looking entirely healthy.

In the second, the condition seems to be one of infiltration, and we cannot definitely determine the extent of the disease.

Operations upon the first of these classes are nearly always successful; upon the second the result is doubtful. The cases before us are both of the first class, and we may, therefore, indulge a reasonable hope that our operation will save life.

(The operations performed consisted in removal of the diseased structures, together with sufficient healthy tissue to insure against return of the difficulty.

The cut surfaces were approximated by the harelip pin and suture, and the free surfaces of the incised lip were stitched together after the mode adopted in operations for phimosis.

Slight hemorrhage continued for some time, but was controlled by a saturated solution of alum, since Dr. G. objects to the unnecessary application of ligatures.—De F. W.)

Elongated Uvula.

C. K., aged 12. White male.

This lad comes to us with a constant, troublesome, hacking cough and tickling in his throat.

His lungs have been examined and found perfectly healthy. Upon looking into his mouth, however, the uvula is seen so relaxed and elongated as almost to meet the epiglottis, and it is fair to infer that here lies the seat of the difficulty. The uvula is an organ composed of muscles covered with mucous membrane, and is bound together by connective tissue; it is, indeed, as if two little muscles were enveloped in a very loose bag, with a quantity of connective tissue thrown in as packing.

A relaxed condition of this bag-like portion is a very frequent condition—so common, indeed, that we have to-day some three cases presenting for operation.

The treatment of such relaxations usually consists in the use of astringent and stimulating gargles,—the tincture of capsicum, combined with a strong infusion of white oak bark, being my favorite application, the capsicum being added to the infusion until it smarts the tongue. Alum has many advocates, but it is very destructive to the teeth.

The quickest treatment is amputation, which is a most simple and painless operation.

The mucous membrane being usually the part at fault, and not the muscles, is therefore clipped off; yet should we make a miss and cut away half or even all the parts, I do not think that serious injury would result.

(Dr. G. then proceeded to operate upon all the cases in the same manner. The head being supported against the breast of an assistant, and the tongue kept in position by a depressor, the tip of the uvula was caught in the forceps, and the section made with scissors curved upon the flat.—De F. W.)

Nævus of Lip.

E. C., aged 6 months. White male.

The tumor seen upon the lip of this child is known as a nævus or "mother's-mark."

It is an erectile growth, being, in this particular instance, composed of a congeries of arterioles. You perceive that it is very red, looking as though it would bleed freely were it punctured, and you will notice, moreover, that the vascularity is circumscribed, not shading off by degrees, but abrupt in its definition.

Such a tumor as the one before us would be well exhibited by a drawing which would represent a single normal vessel terminating in a vascular tuft, such tuft being inclosed by an envelope of attenuated skin.

In any operation upon it by the knife, it would occur to us that we should direct our incision so as to cut the main vessel supplying it, and leave the tuft intact. This would demand but a single ligature, thus making the hemorrhage as easily controllable as any injury of a coronary vessel.

A mode of treatment, however, which I think is to be recommended, and which will be adopted in the present case, is that of strangulation. Strangulation of tumors of the skin has been objected to upon the ground of the too frequent supervention of erysipelas. This is indeed a grave and important objection, but I give it as my individual experience, that such an accident can be avoided by first circumscribing the tumor by an incision of the skin, thus giving the superficial fascia as the first layer in the strangulating ligature.

Moreover, the primary incision does more than guard against erysipelas, for it also secures a healthy cut surface which, immediately commencing to throw out granulations, follows "in the wake," as it were, of the sloughing process, so that by the time the tumor is ready to separate, the resulting ulcer is obliterated to a mere point, thus giving us the double process of repair and destruction simultaneously taking place.

(Dr. G. then made the incision as above described, and threw around the nævus a silk ligature, the ligature being directed into the cut by a harelip pin passed through the base of the tumor.—De F. W.)

Harelip.

The deformity of the child now presented is so familiar to the class that I need not stop to discuss it minutely; suffice to say, that all cases may be put down under two heads, simple and compound.

A simple cleft is a single cleft without complications; the compound clefts have a variety of forms, which may be studied with more profit by us in the future, as the cases present. The case before us is one of the simple variety, presenting a single break in the continuity of the lip immediately to the left of the median line. It is a single V-break, dog-eared at the free surface, being, indeed, the analogue of the hare's lip, whence its name is derived.

In considering a case of this kind, three questions alone are involved: 1st. The time of life best suited to an operation. 2d. The condition of the patient. 3d. The mode of operation.

While much discussion has been elicited concerning the first, yet I think it may be assumed as settled that one time of life is nearly as good as another.

The second question, however, demands serious consideration. Let me quote here some expressions I have published upon the subject: "Every man, woman, and child in the world has a certain amount of physique, and no more.

"The experience and physiological knowledge of the surgeon enable him to weigh this life-force. He must then decide, *imprimis*, whether or not his patient is equal in such force to the demands of the operation. He must consider the condition of his patient at the present time; and this brings up the second of the special propositions, or stand-points, from which the operation is to be studied. The possession of a capable physique does not imply that the life-force has not, like the tide, its ebb and flow. A child may have proper development, yet at the very time when it is presented for operation it may labor under temporary depression, the result of functional disturbances. A child, for example, just convalescent from cholera infantum, or just through with some of the exanthemata, would certainly not be as fit a subject for operation as though it had not suffered; it may have borne the demands made upon it very well, and come out of the ordeal looking strong; but then it is the last feather that bends the camel; the system that endured bravely the one demand may not have a residue of force on hand that will just then meet another. Give such a system time; get it back into the condition in which the first demand found it, and you then have it certainly capable of the same resistance and of the same endurance. Again, a patient may not be up to the required tone, and yet circumstances render a speedy operation desirable. We can assist nature. Exercise, fresh air, and proper food can do much. The last may imply that the milk of the mother, if the child be nursing, be exchanged for that of the hired nurse.

"Who has not examined the milk of a mother or wet-nurse and found it greatly deficient in some important constituent? I have seen babes growing visibly weaker and more puny day by day. I have seen physicians baffled, because they could find no one portion of the economy less healthy than another; and I have seen the microscopist take the milk on which such a babe has been feeding, and, looking at it through his glasses, find it half made up of colostrum. A change of milk has effected immediate change in the child.

"A child may have fibrinous blood to excess, tending to undue inflammatory action, or the lymph which such blood would exude might be so corpuscular in character that a wound would immediately take on suppurative action. Either condition would be adverse to an operation, yet we have antiphlogistics for the one and tonics for the other. A seemingly strong child may be in a typhoid state, and a blushing

cheek may be but the effect of hectic or excitement; typhoid blood has comparatively no fibrin. If you were to perform an operation on such a patient you would have a failure for your pains. A child may be cutting its teeth, yet this does not necessarily contraindicate an operation. It is not every child that has convulsions and kindred troubles with the cutting of its teeth. Many a child goes through the whole process of dentition without cause upon which to ground a sob. If a child is brought to the surgeon, cutting teeth, with an operation for harelip to be performed, and there is associated with the dentition no general or special local disturbance, why should he not proceed, *cæteris paribus*, at once to operate? I can see, and I have up to this time met with, no objections to so doing."

Having, then, decided that an operation is justifiable, the next step is to decide upon the operation itself.

A basis operation might best be represented by a simple V-cleft, having the mesian line of the lip as its centre; the indication being to restore such lip to its normal contour. In looking at the normal lip, we find no break in its continuity, and we find at the centre a projection of more or less graceful curve. Above this, and bounded, laterally, by the alæ nasi, we notice a fossa,—the fossa labialis,—from which the lip spreads itself out on either side, to be lost in the cheek. In order to fulfill the required indications we must, therefore, do three things: remove the cleft in the continuity; create a mesial projection, and give to the centre a fossa. Consequently, for the accomplishment of our object, we must carefully view our case from a surgico-artistic stand-point.

To simply remove the cleft by paring and uniting its surfaces, would be easy of accomplishment, were it the sole indication; but were we to do this merely, we should defeat our second and third indications, since the fibres of the orbicularis associated with the margins of the lip would be put upon the stretch, while all the deeper portions would be comparatively relaxed, thus rendering our desired fossa a promontory, and our soft median swell a stretched mucous membrane.

Since the result depends upon the manner in which we pare the edges, we will therefore use the ellipse, instead of a simple V-cut, it having been proven to fulfill all three of these indications; and it not only allows us to unite the edges, but also, since the centre of the ellipse is its greatest diameter, and this centre is the centre of the lip, it follows, that when we bring together this most widely-separated part, it necessarily projects the most yielding surface, which is the free symphysis of the lip. Moreover, in the third place, the greatest stretch upon the muscle will be in the site of the myrtiform fossa, with a necessary relaxation above and below, which will give just such a result as we wish—*i.e.* a fossa above and a projection at the free mesial line.

There is one precaution which should never be overlooked, since by its neglect the cutaneous portion of the wound may gape, and this

is, that the paring should invariably be V-shaped, as reference is had to the base of the V looking toward the throat; since this will allow for excess in the contraction of the skin over that of the mucous membrane.

Various methods of retaining the parts in position have been proposed, of which the one most commonly used is the harelip pin and figure-of-8 suture; but this is objectionable, since we are liable to have four ugly scars remaining from the compression of the ligatures against the pins. As a substitute for this dressing, therefore, some surgeons are in the habit of using a ring of india-rubber stretched over the pins, the advantage claimed being that its elasticity accommodates it to the inflammatory or serous distention of the part.

Others use simply silver wire sutures, or interrupted sutures of silk from the under surface of the lip. The method which I prefer, however, is to take several extremely delicate silver wires (the fewer the better, provided the purpose is answered), and pass them in such a manner that they will emerge at lines which shall very nearly correspond with the commissure of the lip. Next, take a strip of common sheet-lead, and, cutting it to an appropriate size, make in it as many little holes as you have wires on either side, then pass one end of the wires through these holes and compress upon them a McLean button, *i.e.* a simple flat shot. Then accurately approximate the wound, and fix the wires upon the opposite side in the same manner as before. Should the point of wound between the pieces of lead tend to bulge forward, place upon it a compress, and secure firmly by a bandage.

The advantages of this dressing are that it is entirely unirritating, and may be retained for weeks, if necessary, while at the same time the wound is always easily accessible; and lastly, but perhaps as important as any, no scars will remain from the wires after their removal.

When the patient has arrived at such age as to give us his co-operation, we may use Dewar's compressor, which is an excellent dressing, since we have no pins or sutures to leave behind their unsightly scars.

Ligatures upon the coronary artery should always be avoided if possible, since they interfere with prompt union, and compression of the facial will soon cause all hemorrhage to cease.

There is a feature associated with the formation of the linear cicatrix, and the notch which so commonly deforms harelip patients, that I do not remember ever having seen alluded to by writers upon this subject, but which is of such consequence as to merit the closest scrutiny. Is it the fault of nature or of the surgeon that the operation gives any cicatrix at all? Cicatricial tissue—*tissu inodulaire*, as Delpech more happily calls it—means accidental tissue, new tissue formed from granulations, and is certainly not found in the "union by first intention" of Hunter, or the "immediate union" of Paget. So little inodular tissue would be formed in a true union by first intention that, in the space of

a few weeks, it would leave no observable scar, as so often occurs in slight wounds with razor, etc.

I have removed tumors of the size of a hen's egg, and in a few weeks after been unable to detect the line of the incision; and Mr. Paget, who had the opportunity of dissecting a large wound made three weeks previously, says that it was impossible to distinguish the relation which the parts held to each other from that which naturally exists between subcutaneous fat and fat beneath it. "In short," he says, "there was union by first intention,—it was immediate, both in respect of the absence of any intermediate substance placed between the wounded surfaces, and in respect of the speed with which it was accomplished."

When a wound heals by granulation, there is necessarily an exudation and organization of lymph, thus giving us a cicatrix, or when in excess, a notch.

My explanation of this notch is not the one usually given, I think; but I believe it to be due to the contraction of the fibrous tissue of which the cicatrix is composed, and, therefore, when the amount of such tissue is great, the contraction will be correspondingly great, and the notch large.

Our great object is, therefore, to obtain as near an approach to union by first intention as it is possible to secure, and this is best accomplished by a very careful approximation of the parts, artery to artery, vein to vein, thus hoping to effect rapid inosculation and quick adhesion.

Adhesive strips may be used to assist in the support of the wound, or silk gauze and collodion, which are preferable, since the wound is thus exposed to inspection at any time.

(Dr. G. then pared the edges as above described and brought the parts nicely in apposition by the use of the ordinary harelip pin and suture. No ligatures were used, and hemorrhage soon ceased from pressure of the pins.—De F. W.)

EDITORIAL.

CARE IN THE USE OF INDIA-RUBBER RINGS.

In the employment of india-rubber rings around the necks of teeth great care should be exercised, whether used in the correction of irregularities, to secure an arsenical application in a cavity on the buccal side of a lower molar, to press away the gum from the margin of such a cavity prior to the introduction of a filling, or for other purposes, as carelessness in this respect is sometimes attended by the most unfortunate results to the patient.

Dr. R. Wentworth Browne, of New London, showed me a tooth recently which had been lost in that way. A patient had come to him some time before, complaining of extreme soreness and looseness

in the right upper second bicuspid, which, on examination, he found so loose that the slightest possible effort on applying the forceps removed it. The cause of trouble was then made manifest in a ring of rubber, which had been applied around the neck of the tooth by a fellow-practitioner, and gradually worked its way to the apex of the root, dissecting away the membranes of the root and loosening its connection with the alveolus. The tooth was shown to me in the condition in which it was found after extraction. (See illustration.)

A similar case to this came under my care several years ago, in which a left lower wisdom tooth was lost. The patient complained of soreness and looseness of the tooth. Not knowing the exact cause of the trouble, every means was employed to relieve the soreness and reduce the engorged condition of the surrounding soft parts, but without avail, when it was decided to extract the tooth, and the source of annoyance was revealed in a ring of rubber that had worked its way down the root.

A few years since a fellow-practitioner consulted me in relation to two central incisors, whose irregularity of position he had been endeavoring to correct by means of a silver bar and india-rubber rings. After working with them for two or three weeks, he said the teeth had become very loose and tender, and the gums exceedingly spongy. I advised him to suspend all efforts to straighten the teeth, and to apply tincture of iodine to the gums. In response, he said that he had not done anything toward correcting the irregularity for several days; that he was very much concerned about the case, fearing indeed, that the teeth would be lost, and desired that I should see the patient. An appointment was made, and at the time agreed upon I examined the mouth of the patient—a child, eleven years of age, of a lymphatic temperament. The gums were very much swollen and spongy, and the two incisors so loose that they could readily have been removed with the fingers. Passing a probe under the gum some distance above the neck of one of the teeth, I discovered and removed an india-rubber ring that had worked its way up, at least one-quarter the length of the root. The doctor supposed that this had slipped off, as the patient came to him with the silver bar in her hand, saying that she could not keep it in.

My friend subsequently informed me that he had no further trouble with the teeth. J. H. McQ.

SOUTHERN DENTAL ASSOCIATION.

The meeting of this organization, at New Orleans, we are informed, was largely attended by the profession in the South. The essays presented, and the discussions thereon, were of a highly interesting and instructive character, and we should have been pleased to have given

the readers of the DENTAL COSMOS a report of the proceedings had one been forwarded to the magazine.

In a note addressed to one of the officers of the association, expressing regret at our inability to accept an invitation to be present at the meeting, he was requested to forward a report for publication, but no response having been received, it was impossible to carry out the design. We regret this, as it is our aim to keep the readers of the DENTAL COSMOS apprised of everything of importance that occurs in the profession in any part of the world, and particularly in America. The next meeting of the association is to be held in Charleston, S. C., on the second Tuesday in April, 1871, when it is to be hoped that our friends will favor us with some account of their doings. J. H. McQ.

ST. LOUIS DENTAL COLLEGE.

AN article to which exceptions were taken by the trustees of this college having been published in the DENTAL COSMOS, we are requested to give space to the following answer of defendant in a suit for damages brought by the college. We copy from the *Missouri Democrat* of June 24, 1870:

"St. Louis Dental College, plaintiff, *vs.* Wm. O. Kulp, defendant. In the Circuit Court of St. Louis County, June Term, 1870.—Now comes the defendant, and by consent of plaintiff, and by leave of court herein granted, files this his amended answer to the petition of plaintiff, and states that he made the publication complained of in the 'DENTAL COSMOS,' under *prejudice and misinformation;* and now, being *better informed and advised of and concerning the plaintiff, he fully retracts* the objectionable matter contained in said publication; and having thus fully retracted and disclaimed the libel complained of, this defendant now denies that the plaintiff has been injured in the sum claimed in its petition, and he prays the judgment of the court that he be discharged on the payment of the costs of this suit. WM. O. KULP."

ACADEMY OF NATURAL SCIENCES—EXHIBITION OF THE BIOLOGICAL AND MICROSCOPICAL SECTION.

THE Biological and Microscopical Section of the Academy of Natural Sciences, whose First Annual Conversazione, as reported in our June issue, was so highly successful and gratifying to all concerned, has established a still further claim upon the medical men of Philadelphia to promote its objects, by entertaining their guests, the members of the State Medical Society, at its late meeting in this city, with an exhibition of microscopes and microscopic specimens, at the Hall of the College of Physicians, on Friday evening, the 10th of June.

Among the many beautiful and instructive specimens displayed, the Director of the Section, Dr. S. Weir Mitchell, had on exhibition some very elegant preparations of Teeth, Bone, etc., mounted by Prof.

Christopher Johnson, of Baltimore, and also a fine collection of blood corpuscles from different animals. Dr. William Pepper, Vice Director, further illustrated the subject by a series of blood crystals of remarkable beauty. The wonderful amœboid movement, lately so famous in connection with both Cohnheim's discovery of the origin of pus and Huxley's great lecture on "Protoplasm," was well shown by Dr. J. G. Richardson, the Secretary, with a power of 1400 diameters; while the Corresponding Secretary, Prof. McQuillen, illustrated various departments of Dental Anatomy and Physiology by magnificent sections of teeth of man and animals (showing among other points the interglobular spaces), and of bone exhibiting the lacunæ and canaliculi. He likewise displayed very interesting specimens of human muscle infested with trichina spiralis from fatal cases of Trichiniasis; also the infecting swine's flesh. Prof. James Tyson had on exhibition a complete series of urinary deposits, which attracted much attention, and were among the most instructive objects presented. Dr. Wm. F. Norris contributed some exquisite specimens of nerves in the cornea, and capillaries showing their parietal nuclei—respectively gold and silver stainings—by the methods of Cohnheim and Recklinghausen. Some incredibly large sections of brain, kidney, etc. were displayed by Dr. W. W. Keen, who also showed sundry fine illustrations of nerve-structure. Dr. W. B. Corbitt exhibited a very valuable series of specimens of various malignant and other tumors, collected in Germany, and many of them classified under the supervision of the great pathologist, Prof. Rokitansky.

Mr. Walmsley (of the well-known firm of opticians, J. W. Queen & Co.) and Mr. T. W. Starr each contributed a number of the beautifully mounted preparations for which they are so justly celebrated. Mr. Zentmyer displayed, among other instruments, one of his splendid binocular microscopes, which was greatly admired. Prof. J. A. Meigs exhibited, with others, an injected specimen of the gall-bladder, made by Dr. P. B. Goddard many years ago.

Prof. B. H. Rand arranged upon a side-table his spectroscopic apparatus, and from time to time demonstrated to eager spectators the spectra of different metals, and explained this new and exceedingly delicate method of analysis to the satisfaction of all. R.

DEATH OF DR. W. L. BOWDOIN.

At a meeting of the American Academy of Dental Science, held in Boston, June 7th, 1870, the sudden and unexpected death of Dr. W. L. Bowdoin was announced. Resolutions were unanimously adopted expressive of the sterling professional and social qualities of the deceased; and the sorrow of the members of the academy, and of their sympathy with his family. J. H. McQ.

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

Nutriments.—"At a late meeting of the New York Liberal Club, Dr. Adolph Ott read a paper on nutrition, with especial reference to the importance of the phosphates. After giving a definition of the term nutriment, or food, he went on to show that nutriments may be classified into four groups, to wit: 1, albuminous or plastic substances; 2, fats; 3, carbo-hydrates; 4, inorganic substances; and explained the functions of the elements of each of these groups in detail. According to Moleschott, of whom Dr. Ott is a pupil, the mean daily quantity of food necessary for an adult individual consists of: albuminous substances, 130 grammes; fatty bodies, 84 grammes; saccharine matter, 404 grammes; inorganic salts, 30 grammes; and water, 2800 grammes; in all 3448 grammes. The nutritive quality of any one substance, it was asserted, was entirely relative to the elements of all four groups being equally necessary to supply materials for the continually new manifestations of force. However, in judging of the nutritive value of food, regard must always be had to its digestibility. To quote an instance: oysters contain less nutritive matter than the flesh of fish, yet they are more nutritious. Speaking of the phosphates, the lecturer acquainted the audience with a great number of interesting facts. Among all mineral ingredients, none are more especially attracted and retained by the tissues of the animal body than the phosphoric acid and the phosphates. The higher the organization, the larger the proportion of phosphoric acid and its compounds required. In regard to the brain, it has been found by Bousarelli that among all the organs of the body, it contains by far the largest amount of phosphorus, being twice as large as that in the muscles. Phosphate of lime is present in every tissue; moreover, all secretions from the blood, which are distinguished by their plasticity, exhibit phosphates; and, according to some investigators, these salts are required to supply the first basis for a new tissue, even in the case of those organs which subsequently exhibit an excess of carbonate of lime.

"The second part of the lecture was devoted to the discussion of the question, how the phosphates can be best procured for the system. The great stores of these ingredients are the grains of cereals. They are contained in the so-called gluten-coat, which, like a row of beads, lies between the outer or true grain and the interior mass of starch cells. To illustrate this fact, the lecturer exhibited magnified cross-sections of the wheat-grain or kernel, of commercial bran and of miller's bran. With the present system of grinding, we obtain under the most favorable circumstances only seventy-five per cent. of flour, instead of ninety-four, nineteen per cent., consisting chiefly of gluten and phosphates, being removed by bolting. The objects of this practice are two-fold: first, to separate the ferments lodged in the bran, so that it may be possible to keep the flour for a considerable time without its becoming sour; second, to render it white, so that it will produce bread agreeable to the eye.

"Graham bread and 'Pumpernickel,' or the black bread of Westphalia, are very nutritious, because they contain all the ingredients of the wheat grain, but they are heavy and sour. In the white description of flour, however, the really nutritious elements are altogether wanting. Yet nine-tenths of all the bread in American cities is made of superfine flour, and a large amount, in addition, is used for cakes, puddings, and pastry.

"To Prof. E. N. Horsford, of Cambridge, the friend and former pupil of Liebig, we are indebted for a method by which the nutrition salts that are lost in bolting are restored to the flour. The same consists in the use of a baking powder, which serves the twofold purpose of leavening the dough, and giving strength to the staff of life. The bread prepared by this method has met with the most favorable reception both in this country and in Europe, where it appears to replace altogether the bread fermented in the ordinary way.

"In conclusion, the doctor related his experiences with regard to Horsford's 'acid phosphate,' which seems to act as if it were nutriment to the cerebral and nervous systems, restoring to their normal action secretory organs that have been deranged, giving vigor where there has been debility, and restored strength where there has been exhaustion."—(*Jour. of Applied Chemistry.*)

Neuralgia of the Jaw-bones, form of, hitherto undescribed. By S. D. Gross, M.D., Professor of Surgery in the Jefferson Medical College of Philadelphia.—"There is a form of neuralgia of the jaw-bones, which, as far as my information extends, has not hitherto been described, though, judging from the great suffering which attends it, it has doubtless been observed by other practitioners. Its seat is in the remnants of the alveolar process of edentulous persons, or in the alveolar structure, and in the overlying gum, and it is met with chiefly, if not exclusively, in elderly subjects. It is also more common in the upper than in the lower jaw. The part affected is usually very small, often not exceeding a few lines in extent. The soft tissues around do not seem to suffer, at least not in the same degree, as is so frequently the case in the more ordinary forms of neuralgia of the jaws and face. On the contrary, the morbid action is generally limited to the osseous structure. In rare instances there may possibly be some involvement of the gum, which is nearly always exceedingly hard and dense, grating more or less under the knife, and adhering with extraordinary firmness to the atrophied alveolar process beneath.

"The pain is generally paroxysmal, coming on in fits and starts, very much as in ordinary neuralgia, the slightest causes being sufficient to provoke it, as talking, mastication, the contact of hot or cold fluids, deglutition, or mental excitement. Sometimes it is momentary, coming and going with the rapidity of lightning; occasionally it lasts for hours together, and cases occur, although they are rare, in which it continues, with but little mitigation, for an indefinite period. The pain varies in character. Thus, it may be sharp and darting, dull, heavy, aching, boring, or gnawing. Pressure generally relieves rather than aggravates it. Now and then, when it is uncommonly severe, there may be more or less spasm of the muscles of the face, but this is rare.

"The pathology of the affection seems to be compression of the minute nerves distributed through the wasted alveolar process, dependent

upon the encroachment of osseous matter upon the walls of the canals in which they are naturally inclosed. In the natural state the nervous current passes along without any hindrance, but in this condition of the canals in question its transmission is interrupted, and more or less pain, known as neuralgic, is the consequence. That this explanation is true does not, I think, admit of the slightest doubt. The osseous structure, as previously stated, is always abnormally hard from the deposit of new substance which imparts to it almost an ivory-like consistence.

"The disease usually comes on gradually, and proceeds from bad to worse, until, in many cases, the suffering is rendered nearly intolerable. The general health, at first unaffected, is eventually materially impaired; the appetite is deranged; the countenance wears an anxious expression; the sleep is disturbed and unrefreshing; the bowels are habitually constipated; digestion is imperfectly performed; the extemities are almost constantly cold, and there is terrible depression of spirits. Loss of sleep, fatigue, exposure to cold, irregularity of diet, mental distress, and, in short, whatever has a tendency to lower the vital powers is sure to aggravate the pain and to prolong the paroxysms. Sometimes the disease would seem to be of a malarious origin, the attacks coming on periodically very much as in intermittent fever.

"The subjoined cases will serve more fully to illustrate the nature of this affection, as well as to suggest the proper treatment for its relief.

"*Case I.*—W. D. H., aged 64, had all his upper teeth extracted eighteen years ago, and wore a plate with comfort for fifteen years; but three years since, previous to which time he had always enjoyed excellent health, he felt a sharp, cutting pain dart through the alveolar process of the left upper jaw, which was, however, confined to the portion posterior to the situation of the second bicuspid socket. From this date he was subject to excruciating paroxysms of pain, which lasted from one to five minutes, and were always excited by movements of the mouth, as in speaking or eating. These attacks lasted for a week or ten days, when relief occurred for a similar period; but, although there were intervals of freedom from these paroxysms, yet he always experienced a dull, unpleasant pain in the affected parts, which were not, however, sensitive to the touch, nor did they present any signs of inflammation. The frequency and violence of the paroxysms were generally somewhat lessened by the exhibition of large doses of quinia.

"On the 16th of September, 1869, I carried an incision along the alveolar ridge as far forward as the second bicuspid socket, which enabled me to turn aside the soft parts, including the periosteum, and to remove, by means of the cutting pliers and the gouge, the affected bone to a level with the palatine process. There was no evidence of disease either in the bone or in the soft parts.

"Mr. H. called upon me six months after the operation, from the effects of which, as he informed me, he rapidly recovered. He has not had any severe paroxysms of pain since, and his health never was better.

"*Case II.*—J. McN., a laboring man, aged 57, presented himself at the clinic of the Jefferson Medical College, September, 22d, 1869, on account of neuralgia of the right upper alveolar process, which was edentulous, the teeth having been extracted forty years ago. In the autumn of 1862, while on a sea voyage, he contracted a severe cold,

and suffered from his first neuralgic attack, which involved the alveolar process from its posterior limit as far forward as the situation of the first bicuspid socket. Since that time he has been the subject of intermittent paroxysms of excruciating pain, during the existence of which the mastication of the softest food, or the mere act of swallowing, was attended with an increase of the suffering, while rough handling and the mastication of the hardest articles of food could be borne with impunity during the absence of the paroxysms.

"The affected parts were freely removed by an operation similar to that described in the preceding case. The gum was tuberculated and very firmly attached to the adjacent bone, which was of unusually dense consistence. Entire freedom from suffering up to the present time, April 27th, 1870, has followed the operation.

"*Case III.*—A lady, nearly seventy years of age, a patient of Dr. Nordman, of this city, had suffered for a number of years with severe pain of the left upper jaw, involving hardly three-quarters of an inch of the alveolar process. The cuspid and the two small grinders had been extracted long ago, the gap in the bone left by their removal being much atrophied. The paroxysms of pain were frequent and severe, and had effectually resisted a great variety of remedies employed for their relief. The health was a good deal impaired; the body was very susceptible to cold; the countenance had a woe-begone expression, and there was great mental depression. Excision of the remnant of the alveolar process put a speedy stop to the disease; and, with the aid of a mild tonic, the woman soon regained her former health.

"*Case IV.*—A lady, upwards of eighty years of age, had always enjoyed excellent health, with the exception of an occasional attack of asthma, and, latterly, of a severe neuralgic affection of the left upper jaw, in the situation of the three large grinders, which had been extracted upwards of fifteen years previously. The pain was generally of a dull, aching, or gnawing character, but at times it was sharp and shooting, and exceedingly distressing, having of late left her very little sleep or comfort of any kind. She was habitually peevish and fretful, and often expressed a desire to die, so great was her suffering. Some tenderness existed at the seat of the disease, but the neighboring parts were apparently free from involvement. All the remaining teeth on that side were sound. Excision of the alveolar process was attended with a good deal of bleeding coming on some hours after the operation, but the pain was at once relieved, and never returned.

"*Case V.*—A widow, aged 33, consulted me last summer on account of a neuralgic affection of the left side of the lower jaw, under which she had labored for upwards of three years, her sufferings having at times been extremely severe. The pain was greatest at the side of the two small and first large grinders, which had been extracted several years before on account of caries. It commonly came on in paroxysms, of variable duration, their violence being always aggravated by eating and talking, by disorder of the menstrual function and by damp states of the atmosphere. The general health was good, but the lady was habitually nervous, and much depressed in spirits. The appetite of late had been considerably impaired. The gum at the edentulous gap was often tender to the touch; pressure with the finger usually provoked a severe fit of neuralgia. Various remedies had been fruitlessly employed. The treatment, after the case fell into my hands, was the

same as in the other patients. The pain at once disappeared, and has never returned.

"The first of these cases occurred upwards of ten years ago. A number of similar examples have fallen under my observation, but as they offer nothing of special interest, it is unnecessary to describe them. From all that I know of this complaint, I am free to believe that the only effectual remedy is excision of the affected alveolar process. No particular attention need be bestowed upon the after-treatment. A mild course of chalybeate tonics may be required when the patient is anæmic, or affected with flatulence and indigestion."—(*Am. Journ. Med. Sci.*)

—

"*Neuralgia of Dental Nerve, treated with Chloral; Relief.* Royal Infirmary, Edinburgh.—J. F., aged 55, had, for the last six months, been suffering from neuralgia of the dental nerve of the right side. The pain was intense, occurring in paroxysms almost hourly, and shooting downward in a lancinating manner throughout the entire course of the dental nerve. For the relief of this, nearly all the teeth of that side had been removed; and all the ordinary remedies, both internal and external, had been employed without effect. On admission, he was suffering the most intense agony, and he was emaciated and careworn from constant suffering. Hypodermic injections of bimeconate of morphia and atropia, with bebeeru, quinia, and iron internally were administered without any beneficial effect. It was determined to give the hydrate of chloral a trial. Forty grains were taken in the morning. In the course of ten minutes, the pain began sensibly to diminish, then gradually continued to decrease in severity, and in ten minutes more altogether disappeared. During this time he had not the slightest desire to sleep. The patient remained in perfect comfort for about half an hour, at the end of which time the neuralgia again gradually returned. Another dose of the medicine produced the same relief, which, however, never lasted more than about half an hour. This experiment was frequently repeated, and always with similar results; but it was remarked that in the course of a week the chloral, even although the dose was greatly increased, seemed to lose this anodyne effect, and did not relieve pain without causing sleep. As a commentary upon this case it may be stated that, after all the ordinary remedies failed to remove this distressing symptom, chloral produced temporary relief. The remarkable feature, however, is that chloral, contrary to the general opinion of its action, seemed to produce in this instance a true anodyne effect, viz., the relief of pain without causing sleep. That this was not altogether a coincidence was shown by the repeated observations made upon the case, the administration of the drug always being followed by temporary cessation of pain. Lastly, it would appear that here chloral lost its effect upon the system; as, to produce in this man beneficial results, the dose had to be gradually increased; and, finally, although he took so much as seventy grains, no anodyne action followed."—(*British Med. Journ.* and *Med. News.*)

—

"*New Theory of Nervous Action.*—At the last meeting of the Royal Irish Academy, Dr. R. McDonnell, F.R.S., read a paper on 'A New Theory of Nervous Action, as regards the Propagation of Sensation along the Nerves.'

"The author's paper might be briefly described as an application of a

theory similar to the wave theory of light to the propagation of sensations along the nerves.

"He confined this 'undulatory' theory of nervous conduction with the hitherto more generally received hypothesis of distinct nerve conductors, supposed to exist for each kind of sensation (pain, heat, tickling, etc.), and attempted to point out that the former is at once a simpler hypothesis, and more in harmony with the ideas now prevalent as to the propagation of light, heat, electricity, etc.

"The author also dwelt upon many points of analogy between the absorption or interception of waves of heat or of light, and the somewhat similar phenomena as regards nerve conduction where one kind of sensation is felt, and another ceases to be any longer perceived, as in cases where the patient feels the contact of the hand but cannot distinguish heat, or *vice versa*."—(*Medical Press and Circular.*)

—

"*Chloride of Ethylidene.*—It is curious to observe how, occasionally, medicinal agents which have been used, reported on, and laid aside, crop up again. This week the daily papers report from Berlin that Liebreich has been employing as an anæsthetic the chloride of ethylidene—that is, the monochlorinated chloride of ethyl, with which Dr. Snow made us familiar nineteen years ago. Some of our most eminent surgeons, Mr. Bowman, Sir W. Fergusson, Mr. Henry Lee, and others, operated on patients under this agent, and there was an almost unanimous opinion in favor of it, Snow himself being peculiarly impressed with its safety. The chloride when pure boils at a temperature a few degrees lower and has a lower specific gravity and a lower vapor density than chloroform. It has a higher boiling point, a higher specific gravity, and a higher vapor density than bichloride of methylene. Its composition is $C_2H_4Cl_2$; chloroform is $CHCl_3$, and bichloride of methylene is CH_2Cl_2. It is isomeric with Dutch liquid, but differs in boiling point. The dose required to produce deep anæsthesia is about half an ounce. The notice of monochlorinated chloride of ethyl recalls to us the remembrance that our distinguished countryman, Snow, was suddenly seized with his fatal illness while in the act of writing on this agent. He was drawing near to the conclusion of the chapter in his work which treats of this subject, when in the middle of a sentence he wrote his last word on the page—the word was 'exit.'"—(*Med. Times and Gazette.*)

—

Passage of Gases in the Body.—At the concluding lecture of his course on experimental medicine for the session 1869–70, Dr. Richardson made (*Lancet*) "a very curious experiment, which appears to show that there is a direct and almost immediate passage of substances in the gaseous form through all the tissues of the body, and especially through the coats of veins. Dr. Richardson introduced a fine tube through the nostril of a rabbit into the cranial cavity. Air, or carbonic acid gas, pumped through this tube, instantly made its appearance in the right cavities of the heart. The carbonic acid darkened the blood and stopped the systolic action. Atmospheric air rendered the blood of the right side arterial, and restored the systole."

—

Caries of Hard Palate from Syphilis and Mercury. Case communicated by Charles Fryer, F.L.S., L.K.Q.C.P.I. (*Medical Press and Circular.*)—"J. B., aged 45, was admitted an out-patient at the

Manchester Lock Hospital about seven years ago. He was then suffering from an extreme cachectic condition, loss of appetite, fetor of the breath, spongy ulcerated gums, tremors, loss of memory, vertigo, etc., together with extensive ulceration of the hard palate, nose, and throat, the soft palate being completely destroyed. The history he gave of his case was as follows: About fourteen years previous to admission he contracted venereal disease, and, not knowing at the time the nature of the sore, neglected attention thereto—consequently became worse—then went to a druggist, who put him (according to his statement) under a course of mercury for some months, salivating him to a painful extent; his teeth became loose, and his health greatly impaired. Primary sore healed. Returned after some months to his employment—that of a gentleman's coachman. After a time again became very unwell, node appearing on right leg, which ultimately ulcerated, causing him great pain and distress. Patient had again recourse to druggist. Second course of mercury; in time ulcer healed; returned to work in a very debilitated state. Some months elapsed, when he began to experience difficulty in swallowing, pain and tenderness at the roof of the mouth, which symptoms were greatly increased by exposure to the weather, so much so that he was obliged to relinquish his duties. Ulceration commenced gradually, extending to hard palate, which was when admitted much diseased.

"*Treatment.*—Was put upon mixt. potassæ chloratis, cod-liver oil, and ordered nourishing diet, and was under this treatment for a very considerable time, but with no benefit, the ulceration progressing, implicating the bone structure to a serious extent. Was then ordered mixt. potassæ iodidi, with ferri citratis, which he continued to take until the time he left the hospital (1869), and with very good results, the ulceration, etc. having gradually given way to the last-named remedies, and the surrounding parts assuming a more healthy appearance. The patient, prior to leaving, stated that he felt stronger and in more robust health than he had done for years previous."

Ranula—its Treatment.—The Paris correspondent of the *Med. Times and Gaz.* writes: "The treatment of ranula, which seems to be one of those subjects ever open to discussion, was brought before the Paris Surgical Society at its last meeting in the shape of a case of congenital ranula occurring in an infant, related by M. Blot. The tumor, which was perfectly transparent, and large as a hazel-nut, pushed the tongue upward and impeded its movements, especially during sucking. After hesitating as to which of the different procedures he should adopt, M. Blot traversed the tumor with a tenaculum, and, drawing it out, excised it; and at the end of three weeks the infant remained cured of its malady. M. Marjolin, at the commencement of his practice, was an advocate of excision, but he had renounced it in consequence of the more or less serious hemorrhage he had in several cases seen it give rise to, requiring in some of these the acutal cautery for its arrest. Since then he has employed a seton of one or more threads, which is allowed to remain *in situ* for a fortnight, a month or even longer. Suppurative inflammation is set up, which leads to obliteration and a radical cure. When the children are some years old, he renders the seton more irritating by soaking the threads in tincture of iodine. M. Marjolin states that his practice is unattended with any inconvenience, impeding neither

sucking nor feeding, and has never needed to be repeated. M. Chassaignac, however, does not approve of the seton, as it sometimes gives rise to extremely violent inflammation, tumefaction of the tissues, and excessive suppuration—inconveniences, indeed, which may attend the seton applied in any part of the body. He prefers the application of a small drainage tube, which traversing the tumor may be secured to it, and which gives rise to only a very moderate degree of inflammation. As to excision, he has never had resort to it in consequence of his fear of the hemorrhage it might give rise to. M. Blot observed that the bleeding was not to be feared in the case of transparent tumors like the one in question, and in which he has never found it attended with this or other inconvenience. M. Forget remarked that the procedure employed should vary according to the nature of the case and the age of the patient; and in transparent congenital ranula he agrees with M. Blot in regarding excision as the best procedure. M. Giraldès also advocates it in the case of new-born infants as the most simple, rapid, and efficacious means of treatment, and prefers it much to the seton, which is very inconvenient. As a general rule, it does not give rise to any serious bleeding, especially when this is arterial, which usually stops of its own accord through the retraction of the walls of the artery. It is the venous hemorrhage which is most to be feared and difficult to arrest, because its source is not discoverable. In his own practice, M. Giraldès has found excision the best operation for children under two years of age, drawing out the tumor to be removed by means of a claw-forceps, or, in the absence of this, a tenaculum or a thread passed through the tumor by means of a curved needle. M. Guéniot has cured a ranula the size of a hazel-nut, occurring in a child a few weeks old, without excision, or, so to say, without an operation at all. While about to perform excision, which he, too, regards as the best procedure, he burst the thin walls of the little sac and discharged all the fluid. It was reproduced, but, after having been discharged again in a similar manner, the cyst never recurred. As to hemorrhage following excision, he believes that we should make the same distinction as we do with regard to the frænum linguæ, the incision of which is sometimes attended by hemorrhage. The frænum is sometimes extremely delicate and transparent, and then no effusion of blood attends its incision; but at others it is thick and fleshy, and then even a dangerous hemorrhage may occur. It is precisely the same with ranula. M. Guyon drew attention to the fact that suppurative inflammation set up for treatment of ranula might extend by the dilated Wharton's duct to the salivary gland and give rise to very mischievous consequences; excision should therefore be preferred."

Salivation—Sequence of Typhoid Fever. Case by J. Waring-Curran, L.K. and Q.C.P.I., L.R C.S.I. (*Medical Press and Circular.*)—"Crisis from fever by salivation is very unusual and very rarely met. I believe it remained for a very eminent Irish physician, Sir Dominic Corrigan, to describe the phenomenon first. The following case briefly narrated is a striking example of it, and its rarity actuates me in recording its history:

"E. J. D., a fine healthy boy of eleven years of age, was seized with typhoid fever in common with six other members of the family. With the rest he battled most favorably against the fever until the day of

crisis arrived, when the saliva began to trickle from his mouth. I paid little attention to the circumstances, knowing that he had not a particle of mercury throughout his illness. I gave him freely to drink of chlorate of potass. water. In the course of a couple of days the symptoms became aggravated; the salivary glands were enormously swollen; the tongue protruded, and the saliva literally ran in a continuous stream from the angles of the mouth. Upon the fourth day after the symptoms commenced, the teeth loosened, and he could not be restrained from removing them; left alone one afternoon, he extracted four teeth, and in the course of a few days several others. The head and face and neck at this stage were much swelled and œdematous. The boy could not move his lips, and it was with difficulty he could swallow; accordingly, we were forced to sustain him by nutritious enemata, of wine, beef-tea, and cream, with a little opium added. Although the interior of the mouth was mopped out several times a day, abscesses soon formed, the stench from the discharge of which was intolerable, and the boy gradually got weaker—dying on the ninth day from the period of crisis taking place. The other members of the family recovered favorably, never once evincing a similar train of symptoms.

"I saw the boy every day, and sometimes twice a day, throughout his illness, as there were six in the one house down at the same time, and one or two of them was always needing advice as is usual in such cases at such a time. Upon the morning of the twenty-first day of his fever, I found him going on favorably. He had slept a couple of hours, and the pulse appeared to have gone down in frequency, and the temperature of the body was lower; but having occasion to call in the evening, the nurse directed my attention to the pillow-case being wet with the constant flow of saliva.

"I never saw a better marked or a more severe example of salivation. There was an absence of the line on the gums indicative of mercurial salivation, but in every other respect the case resembled one of profuse salivation. It is very difficult to understand the cause of this form of crisis; that it was owing to reflex nervous agency there can be little doubt; but finding the youth collected, having had a couple of hours' refreshing sleep in the morning, and in the evening symptoms of salivation presenting, seems surprising. The teeth extracted were perfect and free from disease."

Lancing the Gums in Dentition. H. Gibbons, M.D. (*Pacific Medical and Surgical Journal.*)—"There are three objections to scarifying the gums: First, the pain and struggling of the child; second, the increased difficulty of teething arising from the cicatrix; third, the danger of hemorrhage.

"As for the pain, it is trifling, and unworthy of notice. The consequent relief is much more than sufficient to counterbalance the pain. Often the itching of the gums is so intolerable that the impression of the lancet is agreeable. I have known a child to close its jaws on the instrument and press it into the gum with evident satisfaction.

"The struggling of the child, and its fright, are of greater importance, especially if the operation be bunglingly done, as is often the case. There is but one right way of doing it. Take your seat behind the child as it rests on the nurse's lap in a proper light, and placing your knees toward its back, draw its head down between your knees. Let

the nurse hold the infant's hands. What with your knees and your two hands, the head is now completely under your control. Grasp it between your two palms, and as it opens its mouth to cry, thrust one or two fingers of the left hand in its mouth to keep the jaws apart, and use the lancet with the other hand. By this method you have the most perfect command of the head, and can cut exactly in the spot and to the extent you desire. I am thus precise in the description because I have so often seen the operation so awkwardly undertaken as to fail of its purpose, and to endanger serious wounding of the child's mouth.

"Some writers have recommended cutting down on the outside of the gum, toward the root of the tooth, and not on the ridge, in a perpendicular direction, toward the crown. If the gum be much swollen, and the tooth deep, this plan may answer.

"In some cases it is sufficient simply to relieve the distention by scarifying, without cutting down to the teeth. The loss of a few drops of blood in this way is often eminently useful, aside from any topical effect.

"The second objection, viz., the cicatrix, is scarcely worth a serious refutation. When we consider that the tooth effects a passage by inducing absorption of the gum through pressure, it is evident that absorption will be more easily accomplished where there is a cicatrix than where the tissue possesses all its original vitality and power of resistance. Repeated incisions, therefore, have an effect opposite to that which the popular mind ascribes to them. By weakening the vitality of the tissue they facilitate the exit of the tooth.

"Besides, the idea of induration, as attached to the cicatrix, is probably fallacious. I have never observed any induration of the gums, after scarification—perhaps because they heal so speedily, and are kept constantly moist.

"Finally, we come to the most important objection—the danger of hemorrhage. This is of rare occurrence. In an experience of more than forty years, during which it has always been my practice to use the lancet freely in dentition, not a single instance has occurred to me. I have heard the same testimony from my father, after forty years of practice, in which he never hesitated to lance the gums of a teething child.

"Nearly forty years ago, this subject was canvassed in the Medical Society of Wilmington, Delaware—of which I was then a junior member. My recollection of that discussion is distinct. Eight or ten physicians were present, some of whom had been many years in service. The practice of cutting the gums was then universal. And yet, not a single case of fatal, or dangerous hemorrhage, from lancing the gums, had occurred to any one of them, and only one case had come within their knowledge. A child named Collins, the patient of a physician then deceased, had been visited, in consultation, by several of those present, and died after a number of days of hemorrhage.

"But the experience of others is not uniformly of the same tenor. My friend, Dr. Hatch, of Sacramento, in a paper read before the Medical Association of that city, mentions four cases of hemorrhage following incision of the gums, which have come to his knowledge—all of which proved fatal. In these cases, however, there was pre-existing disease which, in all probability, would have destroyed life, had the gums been left intact. Further, they had been treated with calomel, until the peculiar effect of that agent on the blood appeared to be fully established.

Dr. Hatch infers that the operation should never be performed on anemic children, or on those whose appearance might lead to a suspicion of the hemorrhagic tendency; and that it should be particularly avoided in patients under the influence of mercury.

"The experience of Dr. Hatch is exceptional, and not to be accepted as a guide, in regard to the frequency of hemorrhage from this cause. It is extraordinary that so many cases should have fallen under the observation of a single practitioner. There have been deaths from hemorrhage resulting from the extraction of teeth—perhaps as large a proportion as from cutting the gums. The same may be said of many other minor operations. But such extraordinary accidents are not allowed to deter us from operating, when the occasion presents. I therefore conclude that the irritation of the gums from teething is so much more dangerous, under all circumstances, than the cutting of them with the lancet, as to justify the operation, without regard to consequences."

Atrophy induced by Cicatrix, and its Surgical Value. By T. Pridgin Teale, M.A., F.R.C.S., Leeds. (*British Medical Journal*, and *Half Yearly Abstract.*)—"In this paper Mr. Teale links together a series of facts which show that such tissues as derive their nutrition by vessels passing through cicatrices have a tendency to waste—a tendency which does not become evident until some time has elapsed from the completion of cicatrization, and continues for months, or even years, until, in some instances, the dependent tissue fades away completely. Mr. Teale's attention was clearly fixed upon this interesting process by a case, described in his paper, 'On the Relief of Symblepharon by Transplantation of Conjunctiva' (*Ophthalmic Hospital Reports*, vol. iii., Oct. 1861). * * * * * *

"The author shows that the principles here worked out in one case of symblepharon are neither exceptional nor limited to a single class of cases, but that additional illustrations may be drawn from—*a*, Symblepharon; *b*, Cutaneous Nævus; *c*, Subcutaneous Nævus; *d*, Rhinoplastic Surgery; *e*, Growth encroaching upon the Cornea; *f*, Syndectomy. Finally, he deduces suggestions for the treatment of tumors not amenable to extirpation by the ordinary methods. In conclusion, Mr. Teale asks whether we may not so plant cicatrices around or in the interior of tumors which we cannot, or prefer not to extirpate, as to determine the balance of nutrition against growth, and in favor of atrophy? May we not hope, like the French surgeon, to be able to cause the disappearance of tumors without the production of visible cicatrix?"

Diseases of the Upper and Lower Jaws, Cases with Remarks. By Thomas Bryant. (Guy's Hospital Reports.)—"This valuable paper contains a record of forty-six cases, each of which is of interest to practical surgeons. The paper is divided into three parts, the first treating of necrosis of the bones entering into the formation of the jaws, the second of cystic tumors, and the third of solid tumors connected with the jaws. With regard to the treatment of necrosis, Mr. Bryant says: 'When dead bone can be made out to exist, either in the upper or lower jaw, there is but one form of practice which ought to be entertained, and that is its removal. It should be removed, also, with as little disturbance to the soft parts or to the new bone-forming tissues, such as the periosteum, as possible, and it should likewise be removed from the

mouth. When this latter practice is impossible or impolitic, from any cause, the surgeon should take good care that his incisions are made where they will be subsequently little seen. . . . In necrosis of the upper jaw the bone can always probably be removed by means of incisions made *beneath* the cheek; an incision *through* the cheek never seems necessary. In necrosis of the lower jaw, where incisions through the integument are demanded, they should be made below its lower border. When the bone is fixed, or, rather, before it has been thrown off from its attachments, any operative interference must be condemned. . . . Under these circumstances the surgeon should content himself with seeing that all pent-up pus has free vent, by making free incisions through the gum; that the patient's mouth is kept as clean as possible by frequent washings, and that his general condition is kept up by means of tonic medicines and nutritious diet.' With regard to the treatment of cystic disease of the jaws, our author's remarks are equally judicious: 'In every case in which the faintest suspicion exists of the cystic nature of the growth, operative interference should be confined to an exploratory operation, before the graver one of the extirpation of the growth is entertained. . . . In each of the cases which have been recorded, it will have been observed that the treatment was very simple, for a free incision into the cyst was made in all; the subsequent cure being effected by the production of inflammation of the cyst wall by means of plugging its cavity with lint; although in the case of true dentigerous cyst the removal of the tooth through a free opening into the antrum was likewise needed. The opening in all the cases of disease of the upper jaw was made through the wall of the cyst, beneath the cheek, and not by perforating the socket of the first molar tooth after its removal, as is often advised. The opening at this spot can be made more easily, and may be made larger, and is more under observation. It should always be a free one. When the cyst is large, a piece of bone may be taken away, as was done in the instance quoted of dentigerous cyst.' Mr. Bryant's paper is illustrated with four lithographic plates and several wood-cuts."—(J. A., Jr., *Amer. Journ. Med. Sci.*)

—

"*Operation to release the Lower Jaw from Cicatrices of nearly Sixteen Years' standing.* St. Bartholomew's Hospital.—In this instance Mr. Paget said that he had performed an operation suggested by his colleague, Mr. Calender. The patient was a girl nineteen years of age. On admission, the jaws were found to be immovably locked. The cicatrix of an attack of cancrum oris which had invaded her cheek when she was between two and three years of age, firmly adherent to the subjacent hard structures, extended from the angle of the mouth to a point about half an inch from the angle of the jaw. The adhesions having been separated by the knife, the upper and lower jaws were found, on the affected side, to be cemented together by a firm layer of tartar. The only resource was to remove the alveolar processes, including the teeth, as far forward as the lateral incisor. Movement of the jaw and power of mastication are being gradually acquired. A slight plastic operation may yet be needed to reduce the mouth to its proper dimensions."—(*Lancet.*)

—

Tumors removed by Elastic Pressure. Proceedings of the Royal Medical and Chirurgical Society. (*Lancet.*)—"Mr. Henry Lee's method

of removing tumors is especially applicable to subcutaneous nævi; and rests upon the application of elastic pressure. Taking as an example the case of a circular subcutaneous nævus, he would, in the first instance, pass two needles under the skin only, from base to base of the tumor, and crossing at its centre at right angles. On each needle he would wind over the skin a ligature of india-rubber thread; and, in the course of forty-eight hours, the threads would produce a cross-shaped linear slough, the separation of which would divide the skin covering the tumor into four flaps. He then inserts a needle under the apex of each flap, and brings it out in the centre of the base; and next winds a strained india-rubber thread from needle to needle all round, making it pass alternately under the apex of a flap, with the head of one of the four last needles, and under one of the projecting extremities of one of the original needles. The steady pressure of the contracting india-rubber gradually dissects back the four flaps, and a similar ligature is then applied round the base of the exposed tumor. When this has sloughed away, the flaps can be replaced, and healing permitted to occur.

"In brief replies to one or two questions that were addressed to him on points of detail, Mr. Lee mentioned that he had used the india-rubber thread for other surgical purposes, and that its constant maintenance of tension rendered it very useful in many cases."

"*Galvano-Cautery.*—Dr. Sedillot is much in favor of galvano-cautery in many operations, because tissues divided by this means do not ache after the operation, less blood is lost, there is less danger of purulent absorption afterward. A current of electricity passed through red-hot platina wires or plates cuts through tissues as easily as a bistoury."—(*Medical Press and Circular.*)

"*Spray Apparatus with Continuous Action.*—Professor Béclard lately introduced to the notice of the Academy of Medicine of Paris an instrument of this kind, made by Capron & Son. It consists of a bowl in which an elastic ball is confined; over it a cap; and, lastly, a pump supplied with a valve, which latter corresponds with the spray producer. By moving the piston of the pump five or six times, the ball is compressed, and the water, medicated or not, which has been poured into the cup, is forced toward the valve. The latter being opened, a continuous spray is produced, lasting full three minutes. Appropriate tubes may be used for bronchial, nasal, or pharyngeal spraying. M. Béclard stated that the advantage of the apparatus consisted mainly in its continuous action, doing away with the handworking of Richardson's spray producer."—(*Lancet.*)

"*Preserving Fluid for Preparations.*—M. Méhu, Pharmacien of the Necker Hospital, states that for the last two years he has been experimenting with various antiputrescible fluids for the preservation of anatomical specimens, and has at length discovered one which answers excellently. This liquid only contains a small proportion of alcohol, and hence does not cause any considerable contraction of soft textures, which with him have chiefly been portions of the mucous membrane of the bladder, prostate, etc. It contains arsenious acid, which preserves them from decomposition, and the development of cryptogamic vegetation is prevented by the addition of a small quantity of crystallized

*

carbolic acid. The formula is—Arsenious acid, 20 parts; crystallized carbolic acid, 10 parts; alcohol, 300 parts; distilled water, 700 parts. The preparation of this fluid has led him to notice the great solubility of arsenious acid in alcohol, which has not hitherto attracted attention." —(*Lancet.*)

Heating Apparatus Improved.—" John A. Coffey's patent apparatus for distillation is undoubtedly one of the most marvelous discoveries of modern times, and one which will certainly effect a thorough revolution in the mode of applying heat, not only for the purposes of distillation, but for every possible operation in which heat is used. Mr. Coffey has discovered that a sort of paraffin oil may be continously heated in closed tubes to a temperature of 1100° Fahr.—in other words, to a temperature at which iron exhibits a dull redness,—not only without carbonization or combustion, but absolutely with very little change, and scarcely any pressure whatever. This oil has double the specific heat of water, and possesses high conducting power, so that it not only receives heat readily from the fire, but imparts it readily and equably to the evaporating vessels or other substances with which it is brought in contact. The heat can thus be maintained with the greatest nicety and regularity, and at a temperature sufficient to melt lead, distil mercury, generate steam at high pressure, or evaporate the most delicate liquid. Messrs. Doulton have succeeded in producing earthenware evaporating pans and retorts which are impervious to the oil; and in future the distillation of the strong acids may be conducted in perfect safety, without the costly platinum retorts, or the direct and dangerous application of heat to glass; while the distillation of turpentine, alcohol, and other inflammable fluids may be conducted by the circulation of this liquid heated from a furnace in another building. As the fluid oil is so much more readily heated than water, there is a great economy in fuel, particularly as the surface to which the heat is applied may be almost indefinitely extended within the smallest space. We may expect to see the system applied to steamships, to locomotives for the underground railway, and indeed to a thousand purposes where freedom from smoke and economy of space are matters of importance; and we would especially direct the attention of architects to its application to the purposes of warming and ventilating public buildings, and particularly hospitals. By circulating this liquid at a temperature of 600° Fahr., it is possible to deliver, in a given ward, six times the amount of heat which the same bulk of water, heated to 200° Fahr., would convey, and this would be done by the consumption of little more than half the fuel. The patentee proposes to use it for cooking, baking, soap making, oil refining, and for metallurgical operations, where regular and often high temperatures are required. Indeed, we congratulate Mr. Coffey, as we have done on many previous occasions, on his last and most valuable contribution to applied science."—(*Lancet.*)

"*Aluminium—its Mode of Working, and Alloys.—Soldering Aluminium.* The peculiar difficulty which was encountered for years in the soldering of aluminium has been a great drawback for its more general application. The common method of brazing with borax is not applicable for this metal, because it corrodes and oxidizes it. At first, tin solder was used, but that afforded little solidity; and riveting was soon

found out to be too tedious a process. Happily the diffculty has now been surmounted by Mouray, of Paris. The specimens of articles manufactured by his method were first exhibited at one of the meetings of the famous *Société d'Encouragement.* Among these were specially noticed a coffee-pot with eight solderings, several eagles for the banners of the French army, and a trumpet, consisting of forty-two parts.

"Soldered strips of sheet aluminium, in being bent to and fro, never gave way at the soldered spot, but always outward of the same, which, as is well known, is not the case with the best silver soldering.

"Mouray employs five different solders, which are composed as follows:

No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	
80	85	88	90	94	parts in weight of zinc.
8	6	5	4	2	" " copper.
12	9	7	6	4	" " aluminium.

"These ingredients are melted in a crucible. The copper is fused first, and the aluminium is then added in three or four portions. When the whole is liquefied, it is stirred with an iron rod. The crucible is then withdrawn, and the zinc introduced into the mass under constant stirring. It should be free from iron. The liquefied mass is poured in ingot-like moulds, which have been wiped out with benzine.

"The selection of the solder depends upon the nature of the object. In order to quicken its fusion on the metal, a mixture of three parts of balsam of copaiba and one part of Venetian turpentine is made use of; otherwise the operation is performed in exactly the same manner as in the brazing of other metals. The aluminium solder is spread without delay on the previously heated surfaces to be fastened together. In heating, the blue gas flame or the turpentine blast lamp is employed. The more and oftener the solder is spread over the surface the better it is.

"*On other Manipulations in the Working of Aluminium.* In order to avoid trouble in casting aluminium, the metal should not be put all at once in the crucible, but only in small portions, and new ones should not be added until those previously added are melted. Oxidation is prevented by previously dipping the pieces in benzole, and when it is intended to melt the drippings obtained in the working of this metal it is necessary to clean them from the solder which may adhere to them, otherwise the casting will be spoiled. By allowing the pieces to remain for some time in nitric acid, the solder is corroded, but the aluminium is left untouched.

"The annealing of articles made of aluminium is not attended with more difficulties than that of other metals. The operation is performed when the metal commences to glow; in case, however, that fears should be entertained about the striking of the right moment, the object to be heated may be spread over with some fatty matter, which, in disappearing, indicates the time when the object has to be withdrawn from the furnace.

"When to be rolled out, it must be annealed oftener than other metals. This is now attained with great ease.

"In burnishing or spinning aluminium in the lathe, it is necessary to make use of a varnish consisting of four parts of turpentine and one of stearic acid.

"One of the many interesting peculiarities of the new metal is its property of resisting the action of the graver, which slides off from its

surface as if it were glass. When, however, a mixture of rum and the above-mentioned varnish is employed, the graver penetrates into it as if it were pure copper.

"In polishing of aluminium, the substances generally employed for this operation are of no utility. Mouray recommends the use of an emulsion of equal parts of rum and olive oil, made by shaking these liquids together in a bottle. When the stone is used, the peculiar black streaks first appearing should not be a reason of vexation, since they do not injure the metal in the least, and may be removed with a woolen rag. The objects in question may also be brightened in potassa lye, in which case, however, care must be taken in not making use of too strong a lye. For cleaning purposes benzole has been found best.

"Finally, it may be mentioned that objects of aluminium can be electroplated without the least difficulty, and Mouray succeeded in imparting to them a bright white lustre in passing them successively through a weak bath of hydrofluoric acid and aqua fortis. The effect thus obtained is said to be really surprising."—(*Scientific American.*)

"*Fancy Coloring of Metals.*—The coloring matter of small objects in metal has recently occupied the attention of manufacturers and chemists, and M. Pushec, a German chemist, gives the following recipes for the application of sulphur to the purposes referred to:—(1.) A solution is made in the following manner: Dissolve 4 ounces of the hyposulphite of soda in $1\frac{1}{2}$ pints of water, and then add a solution of 1 ounce of acetate of lead in the same quantity of water. Articles to be colored are placed in the mixture, which is then gradually heated to boiling-point. The effect of this solution is to give iron the effect of blue steel; zinc becomes bronze; and copper or brass becomes successively yellowish, red, scarlet, deep blue, light blue, bluish-white, and, finally, white, with a tinge of rose. This solution has no effect on lead or tin. (2.) By replacing the acetate of lead in the solution by sulphate of copper, brass becomes first of a fine rosy tint, then green, and finally of an iridescent brown color. Zinc does not color in this solution—it throws down a precipitate of brown sulphuret of copper; but if boiled in a solution containing both lead and copper, it becomes covered with a black adherent crust, which may be improved by a thin coating of wax. (3.) If the lead solution be thickened with a little gum tragacanth, and patterns be traced with it on brass, which is afterward heated to 212°, and then plunged in solution No. 1, a good marked effect is produced."—(*Druggists' Circular.*)

"*Mechanical Division of Mercury.*—Mr. J. Calvin, of Texas, communicates the following process to the *Chicago Pharmacist*,—it is headed 'Quick way of Extinguishing Mercury.' He states that on shaking tincture of Tolu with mercury (one fluid drachm of the tincture with three ounces of mercury) in a strong two-ounce vial, the whole of the mercury was reduced to a state of minute division, which is easily mixed with fatty or other ingredients."—(*Med. Press and Circular.*)

Zinc and Iron Alloy.—The *Scientific American* says: "Oudemons has succeeded in making an alloy of zinc and iron. The new metal, which contains 4·6 per cent. of iron, is remarkable for its whiteness and tenacity."

THE

DENTAL COSMOS.

NEW SERIES.

VOL. XII. PHILADELPHIA, SEPTEMBER, 1870. No. 9.

ORIGINAL COMMUNICATIONS.

HOW TO OBTAIN THE BEST RESULTS IN USING GOLD FOIL.

BY T. D. SHUMWAY, PLYMOUTH, MASS.

It will not be expected that we can settle this question, but if we are able to state intelligently why our results have not been as satisfactory as we desired, and the obstacles in the way of perfect operations, and how those obstacles have been in a measure overcome, it may perhaps serve some whose results (like our own) have not been commensurate with the care and labor bestowed.

In our first attempts at using foil, our preceptor enjoined the necessity (and subsequent experience proved the wisdom of the injunction) of applying all the force the nature of the operation would admit, in order to perfectly condense the gold, so as to make it impervious to moisture, etc.

When the old method of "wedging" had to give place to the new method of adhesive filling, we naturally brought to the new the same idea of force,—not in the least diminished, but rather increased. We say naturally, for if so much force was a necessity in order to thoroughly condense a wedged filling, how much more did it become a necessity when the gold was to be incorporated into one solid body!

We accepted this theory, and endeavored to put it in practice. It has not been a failure; neither has it been as successful as was anticipated. What is the reason? Our theory was wrong in regard to force, for, instead of additional power, we should have used less. Experience has shown that it requires much more pressure to condense a perfectly wedged filling than is necessary for adhesive filling.

Gold possesses within itself adhesive properties. The particles have an affinity to a surprising degree, but like everything else are subject to certain laws or conditions. The principal of these conditions are heat, a clean, smooth surface, and a solid foundation on which to build. There must be heat employed sufficient to drive off all foreign bodies

that may collect upon its surface, either from the atmosphere or by coming in contact with other substances. Gold, pure and clean, needs but a very moderate heat to give it adhesive properties. If it is impure, or not clean, it must be subjected to a degree of heat that will purify or cleanse it. With these conditions obeyed, when the particles are brought in contact, a natural adhesion is the result.

How is it to be made smooth? We know of but one way, and that is by the use of smooth-pointed instruments in manipulating. The reason why the surface should be smooth, is because that is the only way in which perfect natural adhesion can be obtained. If instruments with rough or serrated points are used, a mechanical union is substituted for the natural, and adhesion is not complete, because an undue amount of force is required to insinuate the gold into the little inequalities of the surface. When more force is used than is necessary to complete the natural adhesion, the work of disintegration begins, because the fibre is being destroyed.

We have recently learned of astonishing results attained by the use of very heavy foils,—if we mistake not, as high as No. 480. We believe the only explanation for this success lies in the principle we have here adduced. These heavy foils are used with instruments having shallow serrations, such as are employed for Nos. 3 and 4. The foil, being very thick and heavy, will not admit the rough surface of the instrument to penetrate through the particles, and therefore a more perfect natural adhesion is secured. Were the serrations of the instruments used with heavy foil of a proportionate length as those used with the light foil, the result would be different.

We believe that any adhesive filling that is not so naturally, but that is possessed of a union by the mechanical appliance of rough or serrated instruments, is not a perfect filling,—is weak in just that proportion that natural adhesion is lost. The filling will absorb moisture, and will crumble with use, if it is on an exposed surface. We know when we affirm this that we can call to mind fillings which have been in use for a long time that were malleted with a rough instrument, and present to-day a perfectly smooth surface; but we have yet to see the first of these where the last pieces of gold were not introduced, to finish the work, either by a burnisher or some other smooth-pointed instrument.

This it seems to us only strengthens what we have asserted, for if this is the best mode of finishing the surface that is exposed, it is also the best method for giving solidity to that part which is to sustain it.

The common practice, when moisture has accidentally covered the surface of the gold so as to prevent adhesion (for there can be no adhesion unless it be absolutely dry), of endeavoring to form a union by going over the surface with a sharp or rough-pointed instrument, and thus preparing it for the remainder of gold necessary to complete the

operation, has in our hands caused its ruin. The operation is always weak at that point, and if it be a contour filling, will usually break off.

The only reliable remedy in such cases is to heat the surface of the gold sufficiently not only to remove the moisture but also to free it of all extraneous matter. As heat enough cannot be applied in the mouth, the only alternative is to remove the whole and begin the operation anew.

To recapitulate. Perfect natural adhesion depends upon a smooth, clean surface, obtained only with instruments with smooth points and sufficient pressure to complete the union. It may be urged that the statement in regard to the amount of force required is very ambiguous. Granted. This can only be shown by actual demonstration. We have, however, the result of some experiments made nearly fifteen years ago by one of the most learned and successful operators in the profession. These experiments were made at the time adhesive fillings were first introduced, and of course without the aid of any previous experience. An instrument, made to indicate the amount of force used, was attached to the plugging instrument, and a given cavity filled, first with No. 4 gold in the form of cylinders,—aggregate amount of pressure 389 lbs. It was removed, and the cavity refilled with the same (No. 4) in the form of ropes or twisted gold,—aggregate amount of force 636 lbs.

The result, as stated by the experimenter, was that "the one with only 389 lbs. was much heavier, or in other words much more dense." The reason given for this was "that in the first experiment the gold was in the cylinder form, and in the second it was twisted;" deducing from this that the cylinder was the true form in which to use gold. We do not think the form could have made any difference, but believe, had the experiment been repeated and the twisted form subjected to the same pressure as the cylinder, the result would have been reversed.

We are sure that any who have not experimented with adhesive gold would be surprised at the small amount of pressure really necessary to consolidate it.

There are other reasons why we believe in the method we have endeavored to set forth, which may be stated at some future time. We are aware that what we have written is in opposition to the established theory and practice of many in the profession. Were we not confident of its truthfulness, and did not our every-day practice confirm it, we certainly would not dare to put it forth. That it is the best under all circumstances, we would not assert. That we have all the truth, would be an arrogant assumption, and from this we pray "deliver us."

OXYCHLORIDE OF ZINC FILLING.

BY THOS. S. STEVENS, D.D.S., TRENTON, N. J.

In the June number of this journal Prof. McQuillen gave an account of the remarkable durability of an oxychloride of zinc filling in his practice, in the hope that it might induce others to give the results of their observations in the same direction. Although my use of the article as a permanent filling for teeth has, like his, been quite limited, yet some of the few cases in which I have used it have come back to my notice with strong claims of durability under certain circumstances. In performing some dental operations for a lady in the spring of 1863, I found it necessary to extract the left upper first molar, it being very much diseased. Its removal exposed a large approximal cavity in the second molar. Further examination proved it to be one of those cases we often meet with, where the tooth, although presenting a fair outward appearance, is "nothing but an outside show;" where, upon excavating, we find that the whole of the dentine can be chipped out with an instrument, like so much rotten wood, leaving nothing but the enamel walls standing, almost as frail in many places as an egg-shell. I carefully excavated and filled this tooth with the oxychloride of zinc, the filling forming almost the entire body of the tooth, the enamel, though very frail, protecting it except upon one approximal surface. I saw the tooth and examined it about a month ago, and although subjected to constant use in mastication, I found it as good as when filled, no part of the enamel having broken away from the filling or shelled off.

Another case. A gentleman had a bicuspid tooth badly decayed,—posterior approximal and part of palatal walls gone. I prepared the cavity to fill with gold, and dismissed him, to return for that purpose; but being unexpectedly called upon to make a trip out West, he came into my office the next day in a hurry, to have the operation completed. Not having time to insert a gold filling, I used the oxychloride of zinc, with the understanding that he should call and have it refilled upon his return; but as it felt so comfortable and gave him no trouble, he did not call to have it refilled, and I did not see the tooth until nearly three years had elapsed, when the tooth and filling were apparently as good as when put in. The exposed surface of the filling was an inclined plane, and it showed very little indication of erosion. In this case there were no direct antagonizing teeth.

In some other cases which I might note, where the filling has not been much exposed, it has proved equally satisfactory. In cavities exposed in mastication I have very rarely used it, and have not had very lasting results where I have; but in teeth where the enamel is not much broken away, yet so thin and frail as not to admit the insertion of a

gold filling, I have sometimes found it to answer a better purpose than amalgam, as it acts as a kind of cement, adhering to the frail walls, uniting them together in one common mass, giving more the support and answering more the purpose of the natural dentine. In other cases it has proved a total failure under the most favorable circumstances, soon crumbling away and washing out. Why this difference in results I cannot tell; but one great point to success is to introduce it into the cavity at a proper consistency, and before it begins to set, and this I have found difficult to do with the kinds I have used. I have never tried Guillois' Cement, so highly spoken of in the *British Journal of Dental Science* by Charles James Fox, M.R.C.S., L.D.S., and which he asserts can be manipulated for some minutes at a consistency resembling putty. An article possessing the qualities claimed for it is the *desideratum* when compelled by circumstances to use plastic fillings.

PRESERVATION OF DECIDUOUS TEETH.

BY C. E. FRANCIS, D.D.S., NEW YORK.

I OFTEN wonder if the members of our profession generally understand how very important it is that the deciduous teeth be kept in a state of health and cleanliness, until by the natural economy they are expelled to make room for their more permanent successors. Even if every dentist rightly considers this matter, it is very evident that the mass of mankind do not.

The question is often asked me, with an earnest, wondering accent, "Do *you* fill children's temporary teeth?"—and many parents have seemed utterly astonished at my emphatic affirmative reply. The general supposition is, that as the deciduous teeth are to serve but a temporary purpose, and are soon to be supplanted by a stronger and more durable set, it matters but little how soon they are lost; consequently many children's teeth are neglected and utterly ruined by decay, and a train of evils is the result of such carelessness.

It is as much the dentist's duty to endeavor to secure for his young patients a perfect set of permanent dentures, by guarding against the causes of decay, as to restore such as are already broken down by disease, and the public need to be instructed in this respect. This is what I desire to urge upon the members of our specialty, for they alone have this work to do. When asked what is gained by preserving children's teeth, I give the following reasons:

First. The teeth are needed for masticating food, and for this purpose should be kept in the best possible order. If the food is improperly masticated, it is not readily digested, and dyspepsia is induced.

Second. If teeth are badly decayed, they are apt to produce pain, causing loss of sleep and temper, and overtaxing a child's nervous system. They also look repulsive, contaminate the breath, inflame the gums, and vitiate the fluids of the mouth. Much fetid vapor thus produced enters the lungs, and the food becomes saturated with the filthy saliva as it passes through the mouth.

Third. The germs of the permanent teeth are liable to receive injury by their close contact with the diseased roots of the temporary ones, and, if the latter are removed prematurely, the maxillary arches become contracted, causing irregularity in the arrangement of the permanent set.

If children's teeth are neglected until they get seriously out of order and become painful, the poor little victims, after suffering beyond endurance, are dragged to the dentist to have the offending members extracted. This gives them a terror of dentists, and the unpleasant impression thus created can never be fully eradicated. No wonder, then, that children of larger growth are inclined to defer having their teeth attended to until disease has made sad havoc in their ranks.

To extract children's teeth prematurely is a cruel, a barbarous operation, and I never miss an opportunity to administer a telling rebuke to parents who wickedly or carelessly neglect the teeth of their little ones.

A few words upon the *treatment* of children's teeth will appear in another number of the Dental Cosmos.

DESTROYING THE PULP WITHOUT PAIN.

BY J. NEELANDS, L.D.S., LINDSAY, CANADA.

A great dread of the operation of destroying the pulps of teeth seems generally to prevail among patients, owing to the severe pain which is usually experienced after the application of the arsenical paste, as in most cases used. Some two months ago I accidentally discovered that by applying a small quantity of carbolic acid to the pulp of the tooth, and allowing it to remain for ten or fifteen minutes, after which it may be removed, and then applying the arsenical paste, little or no pain whatever is experienced. I have adopted this mode in quite a number of cases, and there has not been a single failure. By diluting the crystals with about an equal quantity of water, the carbolic acid may be inserted into the cavity on a little cotton with the point of an excavator. In full strength, the carbolic acid is a powerful escharotic; and to prevent injury to the gums, it is advisable to cover it with a solution of gum sandarac, or some other preparation. I would recommend others to try this method and see if their experience coincides with mine.

PROCEEDINGS OF DENTAL SOCIETIES.

AMERICAN DENTAL ASSOCIATION.

The tenth annual meeting of the American Dental Association convened in the hall of the House of Representatives, at Nashville, Tennessee, on Tuesday, August 2, 1870.

At 10 A.M., the President, Prof. Homer Judd, of St. Louis, called the body to order, and the session was opened with prayer by Rev. T. O. Summers, D.D.

Dr. W. H. Morgan, of Tennessee, the Chairman of the Committee of Arrangements, then welcomed the association in a pleasing address.

Prof. C. K. Winston, M.D., by authority of the Faculty of the University and the medical profession of Nashville, delivered an eloquent speech of welcome. He praised the perfection to which the art and science of dentistry had been brought, and said he was proud to claim full kinship with them as professional brethren.

Dr. C. P. Baird, President of the Tennessee State Dental Association, delivered an address in behalf of that body.

The roll was then called, and over sixty members were found to be in attendance.

On motion of Dr. E. A. Bogue, of New York City, the reading of the minutes was dispensed with.

It was resolved, on motion of Prof. L. D. Shepard, of Boston, that all resident dentists, physicians, lawyers, and clergymen be invited to take seats at the meeting.

The members of the Committee on Prize Essays were all absent, and, on motion, the chair appointed Prof. J. Taft, of Cincinnati, Ohio, Drs. W. O. Kulp, of Muscatine, Iowa, D. S. Dickerman, of Boston, Mass. and J. R. Walker, of New Orleans, La.

The Committee on Dental Physiology were also absent, and Prof. S. P. Cutler, of New Orleans, La., Drs. George H. Cushing and J. N. Crouse, of Chicago, Ill., were appointed.

Of the Committee on Voluntary Essays, Dr. C. D. Cook, of Brooklyn, N. Y., being present, became chairman. Drs. S. H. McCall, of Binghamton, N. Y., and J. Fouché, of Knoxville, Tenn., were added.

Dr. H. E. Peebles, of St. Louis, Mo., moved that a committee of three be appointed to collect information of the whereabouts of the bound volumes of the Transactions, from the several committees having them in charge, and report to the association upon the propriety and practicability of disposing of them to persons not members.

Profs. Shepard, Taft, and Dr. M. S. Dean, of Chicago, Ill., were appointed by the Chair.

Dr. Bogue moved to adopt informally the printed programme furnished by the Committee of Arrangements. Carried.

Drs. Walker, A. C. Ford, of Atlanta, Ga., and Peebles were appointed the Committee on Dental Instruments and Appliances.

The reports of the committees not being ready, a motion to adjourn was carried at 11.05 A.M.

First Day.—*Afternoon Session.*

Called to order at 3 P.M.

After the reading of the minutes, the Committee of Arrangements reported the credentials of the members correct. Adopted.

Prof. W. H. Atkinson, of New York, read the report of the Committee on Dental Pathology and Surgery.

Other written communications upon this subject were called.

Dr. McCall, of the Committee on Voluntary Essays, reported that he had a paper to read, but that it was not written by a member of this association.

A motion was made and carried that it be read.

Dr. Morgan moved a reconsideration of the vote, as he thought it would be a bad precedent to allow parties not members to occupy the time of the association.

Prof. Atkinson hoped the society would hear the paper.

Dr. Crouse opposed it, as quacks could thus thrust themselves into notice and have worthless matter read.

Dr. S. J. Cobb, of Nashville, thought the danger magnified.

Prof. Bogue favored the reading, and did not approve of exclusion.

Prof. Shepard thought the writer of the article had the dental journals and local societies to offer the communication to, but that there are too many who do not take interest enough in either to support them.

Prof. Stellwagen said he came here to learn, and he cared not from what source his fund of knowledge was increased, provided it was truth; he could not suppose it would injure any one. What are committees for, if not to be the judges of the propriety of bringing papers, offered to them, before this body? If the three gentlemen who composed the committee had read the paper and felt that it was worth repeating, he would feel that, out of respect to them, he could not do less than listen. He knew of the writer, and believed he was connected with a local society, and was, if he is not now, an emeritus professor in a dental college.

Prof. Taft, of Cincinnati, and Dr. W. W. Allport, of Chicago, followed in opposition to it as a precedent. The debate was closed, and the original motion lost.

Prof. Atkinson then proceeded with remarks upon pathology. He

had felt impressed with the utter want of certainty as to what is health and what is disease.

By means of a diagram of the universe, he attempted to show how, as matter advanced in the scale, it took up new attributes, and how, with animals, their different senses gave different functions and capabilities of enjoyment.

He proposed the use of diluted sulphuric acid, one or more drops to thirty of water, for treatment of caries of bone, applying it carefully upon a thread of lint wound around an instrument or wire, and passed into the fistulæ, which might be enlarged by plugging with tents, and allowing the moisture to swell the plug and thus make an opening even large enough to look into the bone or pass a finger in. He claimed that the action of the acid dissolved the mineral portion of the diseased bone, aiding its removal by washing, and yet that it would not injure, but rather stimulate the healthy structure to throw out granulations.

Prof. Cutler proposed to follow Prof. Atkinson. Phosphate of lime is a tribasic salt. We have been told that sulphuric acid, hydrochloric acid, etc. form a solution. But this acid takes out one equivalent of the lime, and it becomes an acid salt, superphosphate. Hydrochloric acid produces a soluble salt, so does vinegar, etc.; but the sulphuric acid makes a comparatively insoluble salt. When chloride of zinc is brought in contact with lime, the zinc is turned loose as oxide, and the chlorine takes up the atom calcium, forming chloride of calcium.

Necrosis, he said, meant dead bone. Bone is the lowest tissue in the scale of life, except the teeth, and they are between the animal and crystalline, particularly the enamel; they are endowed with the most sensitive nerves, not excepting eye or ear. If the dentinal tubuli project into the enamel, the substance is very sensitive.

Adjourned.

SECOND DAY.—*Morning Session.*

Meeting called to order at 10 A.M.; seventy members present.

Prayer was made by Rev. Dr. Young.

Reading of minutes postponed until the afternoon.

The resignation of Dr George Watt, of Cincinnati, was read and accepted.

The following resolutions, by Dr. Peebles, were adopted:

Whereas, It is patent to our profession that great ignorance obtains among American mothers regarding the eruption and development of the teeth of their children; and, *whereas*, such ignorance is one of the main causes of the loss of many teeth, and especially so of the six-year-old molars; and, *whereas*, to remedy this great evil will require a thorough and early course of rudimental instruction; therefore

Resolved, That a committee of three be appointed by the Chair, whose duty it shall be to correspond with the publishers of American school books, and ascertain if some plan can be devised to have short, plain

statements inserted of the number, name, form, and arrangement of the several teeth in the deciduous and also in the permanent set.

Resolved, That the committee be and is hereby authorized to make all the necessary arrangements with the said publishers of school books to carry out fully the ideas embraced in the preamble and first resolution, and report at the next meeting of this association.

Drs. Peebles, Fouché, and S. W. Dennis of San Francisco, were appointed as a committee for the carrying out of the resolution. Drs. Kulp and Cobb were added to the committee.

The discussion of "Pathology" was declared in order, and Prof. Cutler continued his remarks of the previous evening.

He said it had been stated that necrosed alveolus could be restored; he thought, if done, it was an exception to the general law of nature. He then described the condition of the tooth, and the relations between it and alveolus by periodentium or pericementum, when this membrane is left bare or denuded by violence, action of arsenic, or cobalt, or any cause. The cementum is like true bone, having all the characteristics; but he would call it super-bone, having more than a bone, for passing through it are the minute fibrillæ from the nerve pulp of the tooth. When denuded, it is extremely sensitive to any foreign body; but bone is not; even in amputation, the pain is only when cutting through the marrow. Now, when exposed, the nerve fibrils of the cementum give extreme pain, and the condition is one of hyperæsthesia. Even when denuded and dry, this is the case. To furnish a new matrix and restore bone will take two years; but we cannot restore the membrane of the tooth upon which to build, or with which the periosteum of the bone unites; no provision has been made by nature; the dentine has no vascular system. When roots of teeth are united, it is always by the cementum. The alveolus in a case he recently had was dead, dry, and necrosed; he broke it out, and the pericementum was dead; but nature had made no attempt to reproduce this pericementum. There is consequently no means of attaching the pericementum to the cement of the tooth. In the tooth we have a neural system projecting beyond the hæmal; the nutrition is extravascular, as throughout the body. Bone is the only tissue that is reproduced; but others, when separated, are united by connective tissue, as cicatrix in muscle. At the point of a fang we may have an abscess, which may be cured and the space filled by cartilage.

Dr. Walker. All are familiar with the fact of the re-formation of the alveolar process where extraction has taken place. Why should we not have the same where the tooth remains?

Prof. Judd arose to take exceptions to some of the points of the last speaker. He would do this to guard from assumptions in the study of the laws of life unless proven by actual facts.

The periosteum, the gentleman claimed, was destroyed; he did not know of any experiments or physiological laws that would demonstrate this periosteum to be dead. Logical deductions lead often to monstrous conclusions. The basis of periosteal structure and pericementum is the same. Beale traces one running into the other. Where there is periosteum, we have the elements to produce new bone, and even the marrow will make periosteum. These facts have been actually demonstrated, and he could not see why it should not be so with pericementum. In the Odontological Society, we have the fact reported that teeth had been extracted, periosteum scraped off, then replaced, and growing fast and firm. After experiments upon producing bone to fill up cleft palate, by dissection of the periosteum, and bringing these flaps together, bone has been found to form under the cicatrix.

Prof. Cutler explained that he had fallen back upon facts, and he had never seen or heard of a case where the pericementum had been reproduced.

Dr. J. G. Willis called attention to the remark that foreign substances could only be gotten rid of by expulsion or encysting. Recently experiments have been made that prove that necrosed bone may be removed from its position without ulceration. The extravasation of blood in brain, or a musket-ball projected into muscle, are familiar instances of encysting. Prof. Lyster gave a case where a sphacelus of the tibia had been removed by the use of carbolic acid without any ulceration.

Dr. Walker. One of the most important matters to call attention to is the hydra-headed monster, the new disease in the mouth from the use of rubber plates. He had met it before the war, but gave up practice then, and upon returning to practice again found trouble. In every case examined he found disease. There is first thickening of mucous membrane, then sores appear, looking often like a piece of half-spoiled beef cut across the grain. He found the processes of the jaw-bones often absorbed as a result of this disease.

Dr. E. A. Herman asked if the doctor saw it in any mouths where other plates were used.

Dr. Walker. No.

Dr. S. B. Palmer. Is the non-conducting property of the vulcanite the cause?

Dr. Walker thought the non-conductibility of the plates had little to do with it; he thought the work due to articles used in the manufacture, such as mercury, etc.

Dr. John Allen, of New York, spoke of a lady who had a set of teeth that caused sloughing of soft tissues and necrosis of palate. He analyzed a portion of the plate for the sake of determining what it contained. Her usefulness is entirely destroyed; her occupation, that of a school

teacher, has gone. When last heard from, all hope was nearly gone. A continuous salivation was going on. His experience was that in nearly every case where rubber is worn he had seen this soreness. His convictions, aside from any preference for other substances, are that it should not be used.

Dr. Morgan had seen few mouths where there was not a disease if artificial work was worn. Nature had not intended false roofs to be worn. He said Dr. Allport had reported one case where platina had been worn and given trouble. He saw a case here in Tennessee, where a lady had trouble from wearing a plate of coin-gold. Idiosyncrasies are discovered where false dentures are worn.

Another case cited was that of a lady wearing an eighteen carat gold plate, who had raw sores in her mouth; this was cured by wearing vulcanite. This does not prove any rule, however, for there are too many exceptions.

Dr. Atkinson. Did the patient wear the plate during the night?

Dr. Morgan. She did not, and often rested the mouth during the day; special regard was paid to cleanliness.

Dr. W. O. Kulp, of Iowa, said: Since this poison cry against the rubber base, I commenced a series of investigations, and, by the aid of friends, eleven hundred cases have been examined—seven hundred where red rubber was worn, one hundred and forty gold plates, two hundred and thirty silver plates, ten platina, and twenty of other bases, such as cheoplastic, tin, aluminium, etc. In proportion, we found fewer mouths in a diseased condition where rubber was worn than where silver; about as many in proportion where gold plate was used. Tin and cheoplastic uniformly produced a diseased condition of the mucous membrane where aluminium, having teeth attached, with some other compound, was worn; the diseased condition of the membrane extended all over the mouth. Uniformly the testimony was that rubber was worn with more ease than any other substance, except from its extra thickness. The cleanest mouths, *i.e.* the most free from disease, were those where aluminium was used, with teeth attached to plate with black rubber. My investigations illustrate that it is an abnormal condition to wear a covering over the roof of the mouth, and that any plate is capable of producing a diseased condition of the mouth if worn constantly and not kept perfectly clean. The result of these investigations ought to make us redouble our efforts to reach the blessed time when no more artificial teeth are demanded, but when all the natural teeth will be saved.

Dr. W. A. Jones wished to state one matter—that in most of these cases mercury had been found present in the system. All metals have an affinity for mercury; probably platinum has the least. The worst cases he had seen were from wearing gold plates. He had seen less

trouble from vulcanite than anything, except Dr. Allen's continuous gum work. He had a patient, a physician, who could not wear a gold plate but a few times. Every week or so, by taking out the plate, mercury was found upon it, which, being driven off by heat, he could wear it. A black rubber plate, vulcanized very highly, was tried with success in this gentleman's mouth.

Dr. C. C. Carroll. Are we not off the subject of pathology?

Prof. Atkinson wished to ask if it is mercury, the metal, or sulphuret of mercury secreted in the system, which causes the trouble?

Dr. Jones could not answer whether it was the sulphuret or metallic mercury.

Dr. Allen. With reference to the trouble from platinum plate, the case mentioned was the only one he knew of where a plate properly fitting had given trouble. The swaging of the plate in base metal will account, he thinks, for the surface being often covered with a base metal. He takes special pains not to let the metal dies come in contact with the plate, putting thin tissue-paper between the plate and dies. He had found that the more continuously persons wear a plate, the better it fits; on that account he wears his plate all the time, even while sleeping.

Dr. J. P. Holmes. Does not the atmospheric chamber cause trouble?

Dr. Allen. Yes, in ninety-nine cases in the hundred it is the unequal pressure. A deep air-chamber should not be used, as it draws down the mucous membrane.

Dr. Crouse. There certainly would be no more pressure in a deep air-chamber than in a shallow one, only that it would be more to fill up. As to the idea of mercury, quinine, or calomel in the system, it is all a notion. It is erroneous, and out of the question. He thought rubber produced more trouble than other substances, but this was due to the non-conductibility of the material. He had a case of granulated and thickened membrane under a vulcanite plate. The periosteum was diseased; teeth loosened. After removal of the plate for two weeks the teeth grew solid in their sockets. The plate was held in position by clasps; no air-pressure. It had been worn three years. He replaced this with a gold plate, and it gave comfort.

Dr. Walker. With regard to vulcanizing, he had found where highly vulcanized it was worse, and where the plate was close to the teeth or resting on them, he found them losing the lime salts more rapidly than when other materials were worn. With regard to cleanliness, where he had seen this trouble it was often in mouths of persons most careful and particular. In one case he had seen a gentleman whose mouth and throat were sore for some time after wearing a rubber plate. A physician of his city had had a relaxation of the palate from wearing a small plate.

Dr. J. W. Moffit, of Harrisburg, Pa., for fourteen years had been using plates of different materials. The friction was generally the cause of the disease, but in rubber plates he found an additional cause. One case was cited where a lady had her mouth covered with small ulcers. On laying aside the plate she recovered, and on the resumption of the plate the trouble returned.

Dr. I. Forbes, of St. Louis. What was the temperament?

Dr. Walker had seen all temperaments affected. One case mentioned was nervo-sanguine.

Dr. Forbes. Was the nervous the predominant temperament?

Dr. Walker. No.

Dr. Forbes. Platinum is a good conductor of electricity—better than gold, and he thought as good as copper. His humble judgment is that platinum plates will excite inflammation in mucous membrane sooner than any other. He had a patient who had worn a plate of platinum which gave great trouble, but a gold plate gave none. Fillings of different materials will give trouble in the mouths of nervous people. Rubber he denied being a good conductor of heat. It had been lately demonstrated that the electricity of the mouth differed as the nervous system predominated; that fillings of different materials made batteries, and around one pole was found decay. The difference in the purity of metals he could not say would produce a current, but a tin or amalgam filling with gold would. Aluminium being a better conductor of electricity, would be a better filling material. With regard to scraping the periosteum and returning teeth, he had, when a young man, taken out and filled a wisdom tooth for a lady. It had lasted five or six years, and then he lost sight of the patient by her going away from the city. He had also extracted a bicuspid, and after syringing out the cavity he replaced it. The tooth remained in the mouth for many years, indeed until the death of the patient.

Dr. Walker said that, without any exception, he had found the disease in all cases and with all temperaments.

Dr. Peebles is of the opinion that the trouble in partial sets is mainly owing to the fact that in this kind of work they often fit up the plates to the necks of the teeth. This is to secure firmness and fixedness. When using gold we are not so particular, as the suction of the gold plates used is trusted to. He had put in a case of rubber where a lady wearing it was very ill for fifteen days after its use. A few hours after her arrival at her boarding-house, after having the plate put in her mouth, she was taken violently ill, vomiting a greenish fluid. He readjusted the plates, and called upon a physician, who led her to think she was poisoned, and they agreed to keep her in town for another trial. The plates had been vulcanized very hard. New ones were made, not so hard, and in three hours after she was again taken sick as before. He finally made gold plates, which gave no trouble.

Prof. Judd. This question is one of very great interest. He would fail in his duty to his profession and his conscience if he did not speak. He had no axes to grind, and no fight for or with anything,—he only wanted truth. Let us look calmly at the subject. Should we not look to it that we do not produce worse diseases than we are called upon to relieve? He wished to call attention to the fact that there are various diseases caused by plates. Let us describe them as we see them,—one from mechanical irritation, another from poisoning, and another from suction or clogging the pores. No one in such a climate as he lives in could fail, if he closely examines, to find a disease from the use of plates. He had seen the mouth covered with spongy masses, filling up the arch with a soft tissue, such as he had never seen anywhere else, distinctly marking a different disease,—a purple-colored, strawberry-like looking mucous membrane. He could quote case after case where he had seen necrosis of the vomer, superior maxillary bones, etc. etc. These were generally in strumous patients.

What are the plates made up of 40 per cent. rubber, 24 per cent. sulphur, and 36 per cent. of mercury? Call them by their right names,—mercury and sulphur plates. It may be said that the material is insoluble; but so is arsenic, and who would put in an arsenical plate? He would not feel as if doing his duty if he recommended this compound of mercury, sulphur, and caoutchouc.

Prof. Atkinson. I am glad of all said, but am sorry to see us spending the time in the details of practical life. Let us try to understand principles, and be done with cradle songs. Men who have been pricked to the heart with love of truth must talk. I am not going to worship Mercury nor Hygeia,—she can take care of herself. Let us pour out whole mouthfuls of seed-thoughts. What is the cause of necrosis? Can mercury cause it? I challenge the world to prove it. I hold that until made a binary it cannot enter the system, but may be between the cells as a simple element entangled in the tissues.

Let us get at the truth only. Anybody who has shot squirrels goes to the hickories. Any one who wants to shoot mercury must not go into the bones, but go along the margins, the alveolar processes. It don't dissolve the tissue. What, then, where a huge necrosis is found? It is syphilis; he would chase it out like a squirrel, and tell the length of its tail. Syphilis is the cause; it is the result of transgression of connubial law. Treat the case as if it were syphilis, and, if proper means are used, if you are not successful, send the bill to me, and I will take care of it financially.

In primary syphilis, extirpate the first portion of poison before it has time to telegraph to the whole body. In secondary, use biniodide of mercury and potash. In tertiary, just go it on iodide of sodium.

Circulation, respiration, and innervation mean digestion—that is, of the pabulum on which the tissues feed. After this comes the assimilation. Cleanliness would cure the whole thing, if we knew what it meant, or how to go back and clean every tissue.

Extract no more teeth; mutilate no more people. Every time we do we lay the bone liable to disease, and the teeth are not there to warn us of it. Outside of zymotic diseases there is none other than syphilis or its effect, resulting from a poison that perhaps may have been introduced into the system of ancestors and handed down. Enamel, dentine, cementum, and bone are all under crystallosophy, and for this he dissolves out the mineral portion and leaves only the animal portion to bring about the cure under the ghosts of their corpuscles.

If gentlemen will say that rubber was the exciting cause for the disease, don't, for five, ten, thirty, fifty, or one hundred and fifty dollars, cut your souls all into scars, so that when you come to heaven's gate Peter won't know you.

Committee on Dental Ethics filled by Prof. J. S. Knapp, of New Orleans.

A letter from Prof. J. B. Lindsey, M.D., of the Faculty of the University of Nashville, was read, inviting the members of the American Dental Association to visit the museum. Half-past two o'clock, on Thursday, was the hour decided upon for the visit, and the invitation was accepted.

Second Day.—*Afternoon Session.*

Minutes read and approved.

The Chair appointed as Committee on Mechanical Dentistry, Drs. Wright and T. T. Moore, of Columbus, S. C.

Dr. Cushing called attention to the marked difference in the experience of persons from various sections of the country, seeming to show something to be due to the climatic influence. In the case spoken of by Dr. Crouse, he had noticed that the mucous membrane, where the plate was not worn, was very healthy in appearance. He had not seen trouble from either gold or platinum plates.

Dr. Taft. This is an exceedingly broad subject, as indicated by the range of the discussion. He preferred that they be confined to general principles, rather than to mentioning the minutiæ of cases. Every one who feels an interest in maintaining these bodies in good condition will see the necessity that this discussion must be kept within bounds. It is more pleasant to contemplate the body in healthy working condition than in disease. Perhaps we, in our anxiety to contend with and vanquish disease, go too far; nevertheless we meet with disease to be remedied and overcome. He had been much interested and instructed in the discussions. The causes of these affections have been referred to, but not as fully as we could wish. Disturbances result from various

causes, and doubtless all see how important it is to study for themselves, so as to become familiar with idiosyncrasies and differences of constitution. It is imperative that all should understand the laws of life.

He said Prof. Atkinson seemed to consider all disease due to the introduction of inimical material into the system. No doubt with some but a small amount will, if introduced, produce trouble. The treatment of wasted alveolar process and diseased bone—namely, the introduction of properly diluted sulphuric acid, so as to dissolve and permit the diseased bone to be washed away—of course requires care and knowledge. Other acids were mentioned by Prof. Cutler; but he thought the sulphuric acid would act without injuring the living part beyond the diseased. Nitric acid or glacial acetic acid would not operate so well. The method of applying was interesting, opening up the cavity and introducing the tent, making but small disturbance among the soft parts around. This requires great care in its use.

For abscesses he had used the tangle tent, a woody, fibrous structure, which, on being introduced, expands from two to four times its diameter, opening up the fistula so as to admit of treatment. There are various causes to be taken into account; their character should be well understood, and the character of the structure should be considered. The structure has its individuality, like the face or body,—one is of strong, another of feeble vitality. It has been said that all are alike in this, and that the difference of susceptibility is due to the difference of the working of the organs. We should study all these differences, and although there is much that cannot be readily found, there is that which is readily seen upon examination. Some may be able to diagnose without being able to convey to one another how it is done. We must study nature and physiology, and the governing laws. Sometimes he thinks we live to fight this enemy of ours, but he would say that it is important to prevent the entrance of disease.

Prof. Cutler would ask what constitutes pathology, if it is not deviation from physiology. When the dentist extracts teeth, is he not bringing about a pathological condition? When he converts the pathology into physiology, then he is a surgeon; but the other operation is that butchery of extracting teeth as performed by quacks, who replace them with their miserable substitutes. He thought it the duty of mothers, of teachers of day and Sunday-schools, to teach the importance of preserving the teeth. As to the subject of rubber, to arrive at the discovery of the causes of these troubles from different kind of plates, we must understand all this vast subject of molecules of matter. A plate cannot press anywhere without producing a disease. One may be a poor conductor, or another too good a conductor, of either heat or electricity. With strong vital temperaments people may tamper with their digestive apparatus, but the delicate suffer from dyspepsia on the slightest provo-

cation. What is nutrition and weight? His observation is that it depends upon oxygenation; this goes in and seizes upon the living tissues, taking out carbon and hydrogen, and, carrying these out, throws them off. To do this the oxygen must be ozone, or in its nascent state, ready to unite with the other elements. The remedy for all disease is first to remove the cause, and if the plate is that cause, take it out.

Dr. Morgan does not profess to understand chemistry to any considerable extent. There are, however, some facts in connection with the use of sulphuric acid. We all know that with living tissues it has a very different action than upon dead. Our surgeons often use this acid for bringing about granulations and restoring lost parts. He thought disease did not come from outside causes alone. If something was taken out of the body, as caloric, we would have disease. He did not know how far magnetism and electricity may affect the system. That the loss of these might affect the health, was possible.

Prof. Taft. The argument of Dr. Morgan, of pathological conditions resulting from the abstraction of caloric, is in favor of Prof. Atkinson's assertion, for this allows the *débris* to remain, and they are certainly foreign matter then. Taking cold is simply holding in and damming back some material which should be thrown out. The pabulum passing in and out of the tissues is essential for the production of heat. By the change of the elements within the body, the force is eliminated which is essential to the condition of health. Motion or movement is a result. It is under the domination of the vital force. Anything arresting or disturbing the conditions of this force aids and produces pathological conditions, whether it comes from within or without. Even a mental condition may produce disease.

Dr. Morgan. Prof. Taft has carried out just the idea which he wished to demonstrate,—the loss of motion or force will cause disease.

Dr. Willis. Much has been said of the manner in which certain functions are performed. But now, why do these changes take place, so as to avoid the rock of which Prof. Atkinson has spoken? The great central force is the sun, and not a single force is in existence which cannot be traced to it. He takes man merely as a machine,—he has nothing to do with his soul. How is the heat in man kept up? Just as in a steam-engine, only that we have an arrangement to carry out the *débris*. The coal contains the force, which was obtained by the vegetation of which it is formed, from the sun. Caloric is not a substance; heat is only a condition.

Prof. Shepard moved the discussion be closed. Carried.

The report of the Committee on Dental Chemistry was then called for.

Dr. Allen, Chairman, reported. The paper related to food. He then said: Let us refer to food, and we find that other nations, who do not change the proportions of natural food as we have done, do not lose

their teeth as we do. The Creator has taken the trouble to prepare our foods properly, and we go to work and throw out the mineral portion. 40 lbs. are taken from every barrel of flour, and a child, it is estimated, uses half a barrel per year. Thus it loses 20 lbs. per year, or in 20 years, 400 lbs.: 13,000 milling establishments and 28,000 men are employed to do this, while 10,000 dentists are trying to patch up the loss. The result is that twenty millions of teeth are annually sacrificed, at the nearest estimate. He was pleased to see it proposed to teach children in our schools about the nourishment proper to use. Every old woman knows that her hens require lime to make shells for their eggs.

Prof. Cutler. Children require, in proportion to their weight, more food. His observations have satisfied him that the lacunæ of bone become filled up with the mineral element, making old age and its chilling coldness. The flesh of old age is tougher, more yellow, dense, etc., from its loss of water. Can we extend the life of man,—can we put off the arrival of old age? Can we keep up a normal condition of these bones? If we can take a miserable tuber and cultivate it into a cabbage we can do this. He thought all men suicides who die from old age. We are all such without knowing it. When developing, feed with the mineral, but when the man has matured, crowd him with the fine flour. No change takes place in hard tissues after they are once fully formed. In relation to the amount of lime, he proposed to use acid fruit, especially if we use limy food, as the oyster, etc. You do not find osseous deposits in the valves of the heart until the bones are filled up first.

Dr. Peebles thought, if he had known it sooner, he would have fed his children on bran instead of flour, as it would be cheaper, but he liked to give them as good food as he used. How will we be able to go at this? Can we change the whole system of our lives?

Dr. Allen. One remark in reply to Prof. Cutler. In Europe, where the poor do not change the proportions of the food, they have better teeth than the aristocracy. When they come here they do lose their teeth, and why is this? Because they neglect to supply the deficiency of loss. It is well established that the hard tissues do change, and it is essential to keep up the supply for the loss to be replaced. We should popularize the idea of grinding up the whole grain as the ancients did.

Dr. Dickerman. There seems to be a difference of opinion as to the change of the teeth; may not the climate have something to do with this? He would say that the Graham flour was $1.75 more per barrel, as they cannot cheat as well in the weight as with white flour.

Dr. Allen. In reply to the climate, he would refer to Humboldt, who says the teeth of Indians of all sections were sound. It depends upon the food.

Dr. Allport. We have heard much of late years about proper food. He would not combat the theory, but he felt that the ability of the system to take it up was a matter of importance. He had hardly credited the statement with reference to the health of the teeth of peasants abroad. He concluded, after examination, that there was not such a difference. In England, he thought the teeth worse than in this country; among the nobility good, regular teeth are hardly to be found. The simple idea that they are better is only due to the fact that in Europe they do not think or care for their teeth as we do. It is more due to the intelligence of the people, and their constantly speaking of their teeth, as is done in this country.

Dr. Allen did not consider that Dr. Allport was much among the peasantry proper while in Europe. Hack-drivers and waiters live on finer food than the peasant. Many years ago, through the South, he examined the teeth, and found that the field-hands, as a general rule, had good teeth, but the domestics and whites had poor.

Dr. Morgan. Have you any conception of the number examined? How many did you ever see of thirty years of age with sound teeth? He had seen but one of mixed blood who had sound teeth. The negroes are almost universally scrofulous and with unsound teeth.

Dr. Carroll. Having read the paper of Dr. Allen, he used it almost as a text-book, and referred many of his patients to it. He did not think the food alone resided in the flour. The males generally have better teeth than the females. Why? The air breathed has much to do with this. We ignore too often the food taken into our lungs.

Dr. S. A. Chisholm could bring to bear a single experiment. In the inland towns among the Mexicans he found many fine teeth; they lived on rough, plain food. On his return to San Antonio, he found those there had bad teeth. This brought him back to the Harris doctrine,—that as our teeth are developed so they remain. Cleanliness, etc. are necessary for healthy teeth.

Prof. J. S. Knapp. Should we discuss so wide a sphere?

Prof. Stellwagen said that, after reading Dr. Allen's report, he had become more impressed with the truth of the theory. What can be plainer than the proposition that, if the elements necessary for the formation of the dental structures are not introduced into the system, we cannot expect to find well-developed and normal organs?—or can we better select the proportions of our food than has been already done for us by nature?

With his own family he had found some of the difficulty spoken of in introducing the use of the bran bread, but he thought he had seen the benefit of it. He also laid great stress upon the importance of keeping the saliva in an alkaline condition. This, if it only prevents the acid action between the teeth, does well; but he was almost

ready to search for direct osmosis between the fluids of the pulp and tubuli and the mouth. The practice of this is simple enough, consisting merely in rubbing *prepared* chalk around the mouth, pressing it between the teeth upon retiring, and washing out thoroughly, two or three times every day, with lime-water.

His first child, a daughter, erupted most of her teeth prematurely, her second deciduous molars coming through when she was nineteen months old; the inferior were so defective that, when she was twenty-one months old, he was forced to fill one with gold, and the other (from the close proximity of the disease to the pulp, leaving but a thin septum of dentine intervening, so that it could not withstand the pressure for consolidating the metal) with amalgam. There were several other small cavities left at the time. Dreading to operate, he had postponed filling until the child was thirty-one months of age, when he had excavated one which presented the worst appearance, to satisfy himself if there was much softening under the enamel, and he found no more than he considered an average amount, but felt that the tooth up to that time was very little, if any, worse than when the first fillings had been inserted, *ten* months before. During this time he had had the child's mouth treated with the chalk and lime-water. Bread made from flour that had not been robbed of its bran was eaten very freely, but not exclusively, every day in the week. In this way he thought that kind of bread very palatable and appetizing.

The cow's milk used by his children,—for they both had to depend mostly upon artificial food,—after being properly diluted with water, to prevent overtaxing their digestive powers, or rather to give it about the same proportion of water as in human milk, was sweetened, and to every half pint one teaspoonful of lime-water was added. His second child, a daughter also, had been fed with milk prepared in this way from the time she was ten months old, and her teeth were much better in appearance and texture. He attributed it to the difference in the diet and the use of antacids.

Plenty of good air and sunlight were of course indispensable for all persons having diatheses favoring caries; the chemical and vital forces must be kept up by free supplies of their correlative forces, heat, light, electricity, etc. For this purpose he advised all his patients to take regular walks on the sunny side of the street; children he preferred to have spend as much as possible of their time in the open air and direct rays of the sun.

In treating teeth, a dentist should never forget that they are part and parcel of the whole economy; if diseased, the vital force of the individual must be cared for, and, if necessary, his system elevated to the proper standard by attention to open-air exercise in the sunlight, food, and sometimes these assisted by the materia medica. In many cases

he had refused to operate until the general health was restored; found patients thus treated were better able to stand the pain; presented mouths whose secretions were nearer the normal condition, and, consequently, the fillings could be very naturally expected to remain intact.

He hoped others present would give their experience with the chalk, lime-water, bran bread, etc., in a word, the treatment spoken of. He felt satisfied that it could do no harm, and in some fifty cases, where pretty thoroughly tried, the condition of the teeth was materially improved, the dentine in some becoming harder, and less frequently attacked by caries. In this way he hoped the profession would make a material step toward improving these organs in coming generations as well as the present one, and thus hasten that millennium when dentists and physicians should be no longer required.

Dr. Kulp. It was always his opinion that a mother could give her children good teeth. He cited a case where a lady had had several children with bad teeth. But seven years ago he had taken her under treatment, and since that time she had had three children born, who were in better condition with regard to teeth.

Dr. Crouse would like to know the condition of the mother with the first and second child.

Prof. Stellwagen. Does the gentleman mean physiologically? Worse with the second than the first.

Dr. Crouse thought there was little difference whether bolted or unbolted flour was used. He thought cow's milk could not be too rich and did not need any additional water for food for infants.

Prof. Stellwagen. What is the proportion of water in cow's and human milk? Is it not greater in the latter? and will not the former be too rich for their delicate digestive apparatus?

Dr. Crouse could not say, but he thought pure milk none too good for babes.

Dr. Walker. We have had light, and good light. I believe the time will come when children will be raised with good teeth. I think local habits have more to do with it than climates. Scrofula has been spoken of,—where do we get our word scrofula? It is from scrofa, a sow; this is why the negroes have worse teeth than the whites. The people spoken of with good teeth are free from this disease.

Prof. Stellwagen. Do the Israelites have better teeth than Christians or those who eat pork?

Dr. Walker. Yes; and this is why the God of Abraham forbade the use of pork.

Prof. Stellwagen. The gentleman's experience is very different from mine. Some of the worst teeth I have ever had under treatment were in the mouths of strict Israelites.

Dr. Peebles' practice is among many of the Israelites; they have worse teeth, but do not take so much care of them. He had come in contact with the Indians also, and the young Indian had bad teeth. The exhumed skulls of Indians examined also had defective teeth. Those living at the time examined may have fed upon fine flour, but the exhumed could not have had bolted flour. With the negroes he found they had better front teeth, but worse molars.

Dr. Forbes. It has for many years been asserted that the teeth of Americans are far inferior to those of Europeans; he would take exception to this. He at one time had examined the mouths of aborigines; he had learned from one old lady who had had much experience with Indians; she said some tribes had worse than others. He thought Europeans had worse teeth than Americans. He had the report of a German lady that had examined the teeth of her relatives in Germany, and they were worse than hers. Another lady had asked him why the American dentists were the best, if it was not from the demand for them; and in answer he told her that she was not educated to know how bad her teeth were. He was proud to say that the American women were so much better looking, especially about the mouth. In Europe a lady would be considered disgraced to have it known that a tooth was filled. He considered it far more reasonable to have a tooth jeweled than the ears or nose. As a rule, the Irish in their own country have better teeth than Americans. But they generally drop out at forty. It had been said that it was criminal to extract a tooth under any circumstances. He could not assent to this,—it was the most consummate falsehood. How about treating teeth and never losing one? He had suffered from operations by those who claimed never to have lost a tooth, and now had but few left.

Dr. Cobb thought that Dr. Allen's paper, with regard to food, was instructive; but how could we practice what he advises? He feared we did not live as we ought to live; he comes with an instructive paper, but does not live as he advises. He wants to see people practice this. He thought it the duty of the dentist to attend to the hard structures and let the physicians attend to the others.

Dr. Allen meant that in early life he did not use brown bread, but now he does always, and his children have never had a tooth extracted, so far as he knows. He lost his teeth from sickness and ignorance in the abuse of calomel.

Dr. Walker thought the time would come when extracting teeth would be a crime.

Dr. Dennis. An epitaph was brought to his mind by these discussions—

"I was well, wished to be better, and here I am."

We will adjourn to the tea-table and eat as before. Consistency is a jewel, but it is as rare as the most precious.

Prof. Taft. Dental chemistry is simply vital chemistry. This subject is broad, and the overlapping of these subjects, vital chemistry, physiology, and pathology, has been the cause of the rambling. He took exception to the remarks of Prof. Cutler, with reference to crowding the system with one kind of food and depriving it of another. At all times during life the phosphate of lime is required ; he does not believe that the system will take up more than required. That the bones will be solidified by any increased amount of mineral material in the food, he thinks a fallacious doctrine.

Prof. Bogue. There is one point that may be brought in, that of discoloration of dental tissues. This may be due to hæmatin, iron, or one or both, if it exists within the dentinal tubuli. He conceived it due to the oozing of the contents of the blood globules into the dentinal tubuli.

Dr. Forbes thought the salubrity of the Irish climate was most perfect, and he wondered that they did not live forever. The meat took the place of bread; in many cases, when used as food, furnished the required amount of mineral substances.

Adjourned.

(To be continued.)

CALIFORNIA STATE DENTAL ASSOCIATION.

Pursuant to a call issued by the San Francisco Dental Association, the dentists of California met in convention in San Francisco, June 29, 1870.

Dr. Knowles was called to the chair, and Drs. Younger and Myers were elected Secretaries.

Dr. Knowles stated the object of the call.

Dr. Ball moved the following preamble and resolution :

Whereas, It is the opinion of the members of this Convention that it will promote the general good of the profession in this State to have a "State Dental Society ;" therefore

Resolved, That we now proceed to the formation of such an organization, and that there be a committee of five chosen to report a suitable constitution and by-laws for the government thereof.

Drs. Ball, Dennis, Menefee, Kingsbury, and Jenner were appointed said committee, who subsequently reported a constitution, which declares among the objects of this association, "to cultivate the science and art of dentistry and cognate sciences; to elevate and sustain the character of the profession; to promote mutual improvement, both professional and social."

The officers are—a president, three vice-presidents, a secretary, assistant secretary, and corresponding secretary, treasurer, and librarian.

Three classes of membership are provided for: acting, corresponding, and honorary.

Acting members must be graduates of some dental college, or have been in practice five years.

The Constitution was adopted, and an election of officers ordered, which resulted as follows:

President.—Dr. C. C. Knowles, of San Francisco.

1*st Vice-President.*—Dr. J. J. Menefee, of San José.

2*d Vice-President.*—Dr. S. W. Dennis, of San Francisco.

3*d Vice-President.*—Dr. H. H. Pierson, of Sacramento.

Corresponding Secretary.—Dr. Wm. J. Younger, of San Francisco.

Recording Secretary.—Dr. H. J. Plomteaux, of Woodland.

Assistant Recording Secretary.—Dr. J. N. Myers, of Stockton.

Treasurer.—Dr. F. A. Park, of San Francisco.

Librarian.—Dr. J. Ball, of San Francisco.

The organization of the association was then declared complete.

The Committee reported the following as proper subjects for consideration by the association during its sittings:

I. *Operative Dentistry.*

1. Extraction of Teeth.
2. Plugging Teeth—Method and Material.
3. Devitalizing Nerves in Teeth—when indicated, and Modes of Practice.
4. Alveolar Abscess and Treatment.

II. *Mechanical Dentistry.*

1. Bases for, and Methods of, Mounting Artificial Dentures.
2. Special Consideration of Vulcanite—its Uses and Abuses.
3. Anæsthetics.
4. Professional Fees.

Adopted.

The subject of "Devitalizing Nerves and Subsequent Treatment," was then considered.

Dr. Younger being then called on, gave a lengthy and clear description of his mode of practice. Uses paste of cobalt, arsenic, and sulph. morphia to devitalize; removes in twenty-four hours; treats with chloride zinc, tinct. iodine, iodine and creasote; fills point of fang with cotton steeped in creasote,—rest of the fang with Hill's stopping or gold; fills crown and pulp cavity with gold.

Dr. Menefee employs dry arsenious acid and morphia; caps with lead, seals with cotton and sandarac, and removes pulp next day; treats with fluid ext. ergot, and fills with gold.

Dr. Park uses spray when possible, and removes the pulp at once,

and fills. In other cases applies the arsenious paste as usual, and treats with creasote for a number of days, so as to allow its removal whole, and without difficulty.

Dr. Roberts applies tinct. aconite, erethrum, and chloroform, in equal parts, for ten minutes; removes the pulp without pain.

Drs. Sichel and Prather use rhigolene spray with success in nearly all cases.

Dr. Ball uses solution of gutta-percha on cotton to seal the apex of the fang; fills with gold.

Dr. Knowles uses spray when practicable; thinks a surgical operation better than chemical action; treats with iodine and aconite; does not fill the fang point with cotton nor swab with creasote; nature protests against its use elsewhere—why not in the teeth? Uses creasote only when the pulp has been destroyed by chemical action; fills entirely with gold.

Dr. Menefee offered the following preamble and resolution:

Whereas, It has been the custom of persons having *patents* for alleged improvements in mechanical dentistry to bring them before the Eastern Dental Association for the purpose of advertising the same; therefore be it

Resolved, That it is the opinion of this association that no such subject should form any part of the discussions of this association.

Adopted.

Dr. Menefee was called to the chair, and Dr. Knowles offered the following resolutions:

Resolved, That a "dental college" on this coast is *essential to the interests* of the profession.

Referred to Drs. Knowles, Dutch, and Menefee.

Resolved, That it is expedient that a periodical be published under the direction of the association.

Laid on the table.

Resolved, That to elevate the profession and to protect the community against charlatanism, *State legislation* is necessary.

Adopted.

The President announced the following Standing Committees, as provided by the By-Laws:

On Arrangements.—Drs. Park, Myers, Plewelling, Willbert, and Kingsbury.

On Publication.—Drs. Knowles, Plomteaux (*ex-officio*), Younger, Austin, and Eaton.

On Scientific Investigation.—1st Section, Drs. Knox, Sichel, and Crowell; 2d Section, Drs. Paine, Dutch, and Roberts.

On Dental Pathology and Surgery.—Drs. Menefee, Bunnell, Lundborg, Light, and Spencer.

On Mechanical Dentistry.—Drs. Cool, Birge, Prather, Coggswell, and Jenner.

A communication from Dr. E. K. Jenner, in reference to his "patent combination of gold and rubber," in which he offers to the association its free use for one year under certain named restrictions, was received, and referred to the Committee on Mechanical Dentistry, to examine and report on merits, etc.

The resolution relating to a periodical was taken up and referred to the Committee of Publication.

Dr. Park offered the following:

Whereas, The American Dental Association holds its annual meeting in Nashville, Tenn., August 2, prox.,

Resolved, That it is expedient that this association be represented in said body.

The subject of "Bases for Artificial Teeth" was taken up.

Dr. Knowles gave the history and composition of "vulcanite," and the chemical changes liable to occur under certain circumstances; believes "vulcanite," as a cheap base, when properly treated, superior to any mixture of the base metals; thinks decomposition complained of to result more directly from imperfect vulcanizing; uses a graduated lamp, and secures uniform results of temperature and time. Time, 2 hours 40 minutes; temperature, 330°. Prefers gold to all other bases; made the first vulcanite used by himself.

Dr. Younger condemns "rubber;" believes it injurious in a large majority of cases; has used English rubber in his practice; has seen the evil effects spoken of in cases of all kinds of rubber; believes it owing to poisonous effects of mercury in the material.

Dr. Paine has known cases of diseased mouths *cured* by substituting vulcanite for gold.

Dr. Ball has met with as many cases of diseased mouths where gold was worn as where vulcanite was used.

Dr. Paine further remarked that he had known cases of disease similar to those referred to by Dr. Younger and others, where no artificial dentures had been usually worn.

Drs. Menefee, Dennis, and Prather did not condemn "vulcanite;" believed the profession could not do without it under the present order of things. Dr. Prather had seen the ill effects of too deep air-chambers; used large shallow chambers.

Drs. Bunnell, Park, and Plomteaux believe that the trouble complained of arose in a large majority of cases from *uncleanliness*,—referred to specific cases, one in which the piece had not been removed for seven years; made in England.

The Committee on Publication reported on the subject of a periodical:

Resolved, That we recommend that a periodical be published *quarterly*, under the supervision of the Committee on Publication, and distributed *pro rata* according to the amount subscribed by each member of the association.

[The periodical referred to is designed as a popular vehicle to convey proper information to parents, guardians, and the people in general on matters of special interest to them in the care and treatment of their teeth, etc.—*Reporter.*]

The matter was recommitted for report at the next annual meeting.

The special committee on matters of a "dental college" reported, and recommended that the subject be referred to the Committee on Dental Literature and Education. So referred, to report at next annual meeting.

Dr. Dennis read an essay on the "Moral of Thoroughness in Dentistry."

A resolution was introduced relating to the use of amalgam, which, owing to some misunderstanding, was postponed indefinitely.

The following were elected delegates to the American Dental Association: Drs. Dennis, Paine, Younger, Light, and Pierson.

Dr. Park offered the following:

Resolved, That our delegates to the American Dental Association be and are hereby instructed to use their influence to have the next sitting of said body in San Francisco. Adopted.

The subject of "Alveolar Abscess: Causes and Treatment," was taken up and discussed by Drs. Dennis, Austin, Dutch, Knowles, and others. Nothing particularly new was elicited, although the subject was ably treated. Dr. Dutch insisted on the *heroic treatment* by the scalpel, and referred to a case in his own mouth which had resisted all other treatment.

Dr. Smith introduced a specimen of McClelland's "rose pearl," and spoke in its favor. Subject referred to the Committee on Mechanical Dentistry.

Dr. Knox illustrated the method of using the "rubber dam" by applying it to the teeth of a member.

A vote of thanks was tendered Dr. Knox.

Dr. Cool presented a specimen of "Cool's metal," which he claimed as his own invention, consisting of pure tin, four parts, and cadmium, one part. Recommended it for partial inferior plates; was too heavy for other work. Referred to Committee on Mechanical Dentistry, to report at next annual meeting.

Dr. Gillespie introduced "Green's pneumatic engine," and spoke favorably of its use.

The President announced the following subjects as theses to be read at the next annual meeting:

"On the Causes of Degeneracy of Teeth, especially among Children." Assigned to Dr. Cutler.

"On the Causes of Irregularity of the Teeth, and the best Method of correcting the same." Assigned to Dr. Younger.

"On the Pathology and Treatment of Alveolar Abscess." Assigned to Dr. Austin.

"On Dentistry,—its History, Present Status, Claims, and Relations." Assigned to Dr. Gillespie.

On Exostosis,—History, Causes, Effects, and Treatment." Assigned to Dr. Prather.

"On Professional Fees." Assigned to Dr. Ball.

The Committee on Mechanical Dentistry reported on the specimens and method of mounting teeth on gold and vulcanite presented by Dr. Jenner, and say they regard it as an "improvement, being stronger, cleaner, and much neater than the ordinary gold-plate work." Report filed.

The Committee on Mechanical Dentistry reported on Dr. Cool's method of lining vulcanite plates with gold or aluminium as being worthy the attention of the profession.

The members were invited to send any specimens of interest to the profession to the State Librarian, as a commencement of a dental museum.

The subject of "Plugging" being in order, Dr. Knowles said: Plugging teeth is by young practitioners thought a very simple matter,—only "stopping a hole." But there is the rub,—how to do the thing. After more than thirty years' constant practice, trying every day to do better than was done yesterday, it is still with me a problem. Take, for instance, a posterior approximal cavity in the second inferior molar. First "gets at it" by either wedging or cutting with chisels or file, so as to get a clear view with the glass; opens freely from the top so as to make the cavity *compound;* uses chisels and gouges of his own make for this purpose; cuts walls perpendicular from top to bottom with very slight dove-tailing; sees that the cervical margin of the cavity is formed so as to leave no angles or pits with the walls; works on the parabolic plan; in no case leaves abrupt angles or forms retaining pits; fills with cylinders or blocks formed by folding soft foil into strips of the width necessary for length of the blocks; folds on flat broach; allows first block to be wide enough to completely cover one wall from *above* the top to the bottom of the cavity, and turn a little on cervical wall; pushes home firmly with bladed pluggers; treats opposite wall the same way; now introduces block sufficiently large to completely cover cervical wall, and "puts it home" with a mallet or strong hand-pressure; follows the same process till a mere slot is left, which he fills with adhesive foil, files and finishes; treats all proximal cavities in molars and bicuspids as compound; never undercuts grinding surface, but plugs square down toward neck of the tooth; always uses blades serrated at point; uses adhe-

sive foil in "cones" or "strips" from the heater; chooses the finest serrations for adhesive foil; has used heavy foils; used pure gold rolled thin more than ten years ago for large cavities in molars; has had experience in sponge gold, but likes foil better for all cases of contour plugging; uses cylinders in proximal cavities in front teeth; fills cervical portion first with cylinders large enough to completely cover the wall, and uses flat blocks to cover lingual wall to apex, which he fills with another cylinder, and finishes plugging with strips of adhesive foil packed firmly into place; does not have trouble with cylinders "bucking" out of place; studies the "divine fitness of things" before beginning to plug; then acts accordingly.

On motion, adjourned, to meet in San Francisco on the first Tuesday in June, 1871.

NEW YORK STATE DENTAL SOCIETY.

THE second annual meeting of the Dental Society of the State of New York was held in the Assembly Chamber, at Albany, Wednesday and Thursday, the 29th and 30th of June, 1870.

The President, Dr. B. T. Whitney, of Buffalo, in the chair.

After the usual routine business, the President read his inaugural address, congratulating the society upon its progress and prospects. The society is in one sense a legislative body, the Legislature having conferred upon it certain privileges and powers for the regulation of the profession in the State.

One death has occurred in the society during the year, Dr. Nelson Stevens, of Batavia, of whom the President spoke very kindly and warmly.

All the eight district societies are in excellent working condition.

The State has, by act of the Legislature last winter, conferred the power on this society to confer the degree of Master of Dental Surgery in addition to the diploma.

This society is now perfected in its organization. The President suggested the establishment of a system of lectures; also, a system of dental statistics, blanks to be furnished by the society; also, recommended a committee on essays.

The district societies all reported, fully and favorably.

The Board of Censors reported, through Dr. Westcott, that they had examined and passed twenty-two candidates from the organization of the society, including the present session, besides examining quite a number who did not pass.

The Publishing Committee reported, through Dr. Rogers, that they expected to publish the proceedings of the society during the coming year, in one volume.

There were no applicants for the essay prizes.

Dr. Westcott reported that the Committee on Legislation, appointed at the last meeting, had obtained from the Legislature the power to confer the degree of Master of Dental Surgery, in addition to the diploma; also, an act making it a misdemeanor with penalty to assume that or any other degree for purposes of deception.

Dr. Atkinson read a paper on "Why do Teeth Decay?"

In a general way we may inquire why any body decays; and reply, because it is imperfectly formed.

The paper proceeded to give an unusually clear statement of the process of the formation of the teeth; the commencement and progress of deposit; the currents carrying the fluid pabulum; the causes of disturbance, and consequent effect. Decay results primarily from imperfect formation; imperfect formation is not due to deficiency of material, but to disturbance of the process of deposition and nutrition. Imperfect formations are ready to yield to destructive agencies or influences that may subsequently be brought to bear upon them. Equasion or balance of sun-presence and earth-presence produces perfection of individual body; and want of this equality or balance, in which one predominates over the other, produces imperfection of individual body: in the first, molecular affinities are satisfied and at rest; in the second, they are dissatisfied, and ready to separate or decay.

Dr. Francis read a paper on "Diagnosis," the substance of which was, that the first step to be taken is to establish a correct diagnosis. Without it there is but a bare chance of a successful issue. The ability is acquired only by an acute and well-trained intellect. A mere acquaintance with general symptoms of diseases cannot enable the medical practitioner always to make a correct diagnosis: he must be educated all over; the eye, to detect any external evidence of disease; as for instance, the appearance of the tongue and mucous membrane of the mouth, the expression of the eye, the color of the skin, the character of the various secretions, etc. The fingers must be so trained that their delicate touch will detect the character of the pulsations, etc. If our diagnosis be erroneous, our so-called remedies may aggravate existing difficulties.

Dr. R. G. Snow, of Buffalo, read a paper, illustrated by numerous drawings, on the "Physiology of the Nervous System," presenting at one comprehensive view their character, composition, function, and distribution.

There was but little time for the discussion of any subject. But Dr. Atkinson, in speaking of Dr. Snow's paper, referred to the mutilation of nerves in extracting teeth, and said he would never extract another tooth as long as he lived.

The President then read his annual address, which was confined

principally to the history of dentistry, and will be of unusual interest when published in the Transactions.

Dr. Marvin, of Brooklyn, read a most excellent paper on "Dental Conservatism." The "balance-wheel" principle was illustrated by many examples. True progress does not require us to throw aside old principles and plans. The natural desire for notoriety projects a great many of the new theories which are brought forth. The intelligent discoverer seeks to show the connection of the new with the old, that the student may see and be encouraged thereby. It is too late in the world's history to do a thing without a reason. The reputation for carefulness in using new remedies will give to the conservative man great advantage. Let us make haste slowly. "Prove all things, and hold fast that which is good."

Dr. Kingsley read a paper on "Dental Irregularities," illustrated upon the blackboard. No operation within the dentist's sphere requires better judgment, more clearness of perception and mechanical skill, than the irregularities of the teeth. There is a fascination in treating such cases. Quite as much depends upon a ready adaptation of means as upon any knowledge one may possess.

Dr. W. B. Hurd, of Brooklyn, read a paper on "Filling Teeth." A good operation, even to-day, is the exception to the rule, even of the best operators. The public drives the dentist to this thing by estimating the cost too narrowly.

Dr. Hurd having intimated that a good amalgam was to be preferred to a bad gold filling, Dr. Westcott said that he was in the amalgam war of 1848, and said then and says now that the less amalgam the better. He had been in the habit of using solid block tin, fitting as near as may be to the cavity, and then imbedding in soft amalgam; a specimen of which he exhibited, which seemed to be regarded with favor.

Dr. C. E. Francis, of New York, said that if children's teeth were properly attended to they could be permanently preserved. Gold is not always the best thing to fill them with; prefers tin foil.

Dr. Marvin says tin foil is the best for some cases, especially six-year molars. The difficulty has been to get good tin foil: it was rotten and crumbling. It can now be procured of excellent quality. There are some cavities where he prefers Hill's stopping to gold in children's teeth; has known it to last for years.

Dr. Abbott, of New York, thinks there is one difficulty overlooked,—that of *handling* Hill's stopping. He puts in the filling and then throws cold water on it to cool it, and then cuts it off with a sharp instrument. He believes that the old plan of using soft gold and wedging it in is the only true principle; thinks that the practice of driving wedges between the teeth when they are tight together, is a villainous practice.

Dr. Elliott, to fill roots, puts in first some gold, then ropes of gold mixed with oxychloride of zinc.

Dr. Straw thinks that a root thoroughly filled with gold from foramen to crown is the best that can be done for it; speaks very favorably of tin; condemns amalgam.

Dr. A. C. Hawes wishes to indorse the views expressed by many in favor of using tin for filling children's teeth.

The society then proceeded to the election of officers, with the following result:

President.—L. W. Rogers, Utica.

Vice-President.—C. A. Marvin, Brooklyn.

Secretary.—Charles Barnes, Syracuse.

Treasurer.—A. C. Hawes, New York.

Corresponding Secretary.—W. H. Atkinson, New York.

State Censors.—S. H. McCall, Binghamton, for the Sixth District; and R. G. Snow, Buffalo, for the Eighth District.

Also, seven permanent members were elected.

O. A. JARVIS.

INDIANA STATE DENTAL ASSOCIATION.

THE association met at the lecture-room of the Indiana Medical College, at Indianapolis, June 28, 1870.

President John F. Johnson called the meeting to order, at 2 o'clock P.M.

After the usual routine of preliminary business, the subjects for discussion were taken up.

1st. "Hypodermic Medication as it pertains to Dentistry."

Dr. W. F. Morrill read an essay upon the above subject.

Prof. Judd, of St. Louis, related several interesting cases that had come under his observation where hypodermic medication had been of incalculable benefit.

The second subject, viz., "What are the Indications for Destroying the Pulp?" was opened by Dr. Knapp, with an essay, in which he reviewed the grounds the profession had passed over in the last fifteen years in their efforts to preserve the vitality of the pulp, and congratulated the members upon the probable attainment of that end in the use of os-artificiel for capping.

Prof. Taft, of Cincinnati, contended earnestly for saving the pulps of teeth.

Prof. Judd, of St. Louis, Prof. Watt, of Cincinnati, Prof. Moore, of Lafayette, and others followed, all advocating the protection of exposed pulps, as now employed by nearly every thorough dentist.

The next subject considered was, "Filling Teeth with Gold." Prof.

A. M. Moore read an essay describing minutely the preparation and filling of that class where the centre crown cavity is complicated with fissures, illustrating his idea with a very elegantly executed case on the natural organ.

The professor also held a clinic at the rooms of Drs. Strong & Smith, by appointment of the President.

"What is the best Substitute for Vulcanized Rubber?" the subject now reached, was first discussed by Dr. Hollingsworth, who was invited to address the association on the process of casting aluminium base, as discovered by himself. He accordingly explained his method, and, in the presence of the association, cast a plate. A part of the invention consists of a "plunger" that forces the metal, while fluid, into the sharpest angle.

Dr. Keightley prefers aluminium to rubber.

Dr. Phemster described his process for casting aluminium, and illustrated the apparatus on the blackboard.

Prof. Watt, of Cincinnati, regards aluminium as much better than rubber; is of the opinion, however, that it will not prove to be entirely satisfactory. His experiments have been made with a view to get something more easily manipulated than aluminium,—so simple as to induce even tyros to abandon the use of rubber; thought he had succeeded in obtaining an alloy that was about as easily cast into plates. It is known as Watt & Williams' alloy; it successfully resists sulphur, oxidation, and chloridation. He was of the opinion that humanity had been poisoned long enough by rubber.

Prof. Watt also exhibited platinated silver,—a combination of platina and silver for upper plates, that swages about as readily as aluminium; is pure in the mouth. Teeth can be attached with the above alloy, or soldered, if preferred.

Dr. Stanley spoke in favor of Watt & Williams' alloy; it retains its color better, if there are any odds, than aluminium.

Dr. Phemster thinks, in all the sixty-nine elements, nothing is so admirably adapted, on account of its lightness, strength, and purity, as aluminium.

Prof. Judd, of St. Louis, has been anxious to see rubber go out of use, because he is satisfied, after thorough investigation, that thousands were annually poisoned with it; thinks aluminium will withstand the juices of the mouth perfectly, and is vastly superior to rubber in all shapes and forms.

Dr. Morrill has observed aluminium plates to become impure in the mouth when much care was taken; advocates rose-pearl as a substitute for rubber. It can be made more thin, lighter, better color, and nearly as cheap as rubber. He thinks it is bound to come into general use sooner or later.

An essay was read by Dr. Morrison on "The Preservation and Treatment of Deciduous Teeth."

Dr. Driscoll also read one on "The Elevation of the Medical Profession."

The following officers were elected for the ensuing year:

President.—W. C. Stanley, of Dublin.

1*st Vice-President.*—E. V. Burt, of Lafayette.

2*d Vice-President.*—W. S. Heiskill, of Indianapolis.

Treasurer.—C. C. Burgess, of Indianapolis.

Secretary.—Seneca B. Brown, of Fort Wayne.

Adjourned to meet in the City of Fort Wayne, on the last Tuesday in June, 1871. SENECA B. BROWN, *Secretary.*

AMERICAN DENTAL CONVENTION.

THE sixteenth annual meeting of the American Dental Convention will be held in New York, on the third Tuesday in September (the 20th), 1870.

All dental practitioners are entitled to the privilege of the convention, and invited to present any matters of general professional interest.

J. H. SMITH, *Recording Secretary.*

NEW HAVEN, August 1, 1870.

WISCONSIN STATE DENTAL SOCIETY.

JUST as we are going to press, we have received a call, numerously signed, which we should have been glad to publish, inviting "the entire dental profession of the State of Wisconsin to meet in mass Convention, in the city of Milwaukee, on Wednesday and Thursday, 28th and 29th of September, to form a State Dental Society, and to devise and adopt such other measures as will tend to elevate and advance the interests of the profession."

EDITORIAL.

THE MONUMENT TO DR. HORACE WELLS.

DR. JAMES MCMANUS informs us that the Legislature of Connecticut has appropriated five thousand dollars, and the city of Hartford ten thousand dollars more, toward the erection of a monument to the memory of Dr. Horace Wells, the discoverer of anæsthesia, with the proviso that additional sums are to be raised by private subscription, and devoted to the same purpose. An opportunity is thus afforded to the dental and medical professions to contribute toward this object. A small amount from each member of the dental profession in the

United States (numbering about ten thousand practitioners) would make in the aggregate a handsome sum, and secure the prompt construction of the proposed monument.

In ancient and modern times the brilliant achievements of warriors, orators, statesmen, and authors have been honored, and their memory perpetuated in monuments of marble or of bronze by an admiring people. Too often the man thus honored has been a terrible scourge to his fellows, carrying war and desolation over the earth in the accomplishment of his mad ambition. Well may the commemoration of such deeds and of such a man be called in question. But he who has been so fortunate as to confer upon his race a blessing that will continue through all time to relieve suffering humanity of the most excruciating pains, and rob the operations of the surgeon of half their terror, presents a claim for grateful remembrance which cannot be doubted, at least by those who have enjoyed the benefits of his discovery. Of all the benefactors of mankind, none are more entitled to the gratitude of his fellow-men than Horace Wells, the discoverer of anæsthesia.

J. H. McQ.

HOLLY STRIPS FOR POLISHING GOLD FILLINGS.

In a recent visit to New Haven, Conn., Dr. J. H. Smith directed my attention to the use of holly strips for polishing gold fillings; having used them to a considerable extent since that, and found them useful, I would recommend them to the profession. The wood is in thin shavings done up in rolls several feet in length. When used, a narrow strip is torn off, and levigated pumice, putty powder, rouge, or other substance, is applied in the same manner as when tape is employed.

J. H. McQ.

BIBLIOGRAPHICAL.

The Extinct Mammalian Fauna of Dakota and Nebraska, together with a Synopsis of the Mammalian Remains of North America. Illustrated with 30 plates. By Joseph Leidy, M.D., LL.D., Professor of Anatomy in the University of Pennsylvania, etc. With an Introduction on the Geology of the Tertiary Formations of Dakota and Nebraska, accompanied with a Map, by F. V. Hayden, M.D., Professor of Mineralogy and Geology in the University of Pennsylvania, etc. Philadelphia, 1869.

In a preceding number the reception of this valuable work from the author was acknowledged, and an analysis of its contents promised at another time. This will now be attempted, although the limited space at command in the pages of the magazine makes it necessarily brief.

The description given by Prof. Hayden in the introductory chapter

of the geological formation of Dakota and Nebraska during the tertiary period, is exceedingly interesting, particularly that devoted to the "Mauvaises Terres, or the Bad Lands of White River," so named by the Indians on account of the barren and unproductive soil (which appears to have been the deposit of an immense fresh-water lake), composed mainly of hardened clay. It has been cut into deep valleys and gorges by the streams and atmospheric agencies, and presents some of the most curious scenery in the world. From this region and that of the Niobrara River were collected by Prof. Hayden, during various expeditions under the auspices of the United States Government, the Smithsonian Institution, and the Academy of Natural Sciences of Philadelphia, a large number of fossils, amounting to several tons in weight.

The classification and description of these fossils, by Prof. Leidy, embraces about seventy-six species of extinct mammalia, including the orders Carnivora, Ruminantia, Pachydermata, Solipeida, Rodentia, and Insectivora.

The teeth occupy an important, indeed a leading, part in the classification and description of these remains. Thus, among a number of Carnivora were three species of Hyænodon belonging to the Mauvaises Terres, remarkable for the formidable character of their teeth, indicating animals of eminently rapacious habits. The genus, now extinct, had representatives inhabiting France during the middle tertiary period.

The sabre-like upper canine teeth of three species of panther, smaller than our common panther, are dwelt upon, along with the fact that "several specimens of skulls of these animals and the contemporary Hyænodons exhibit the tooth-marks of terrible conflicts among them."

Of the Ruminantia, embracing twenty-seven species, all belonging to extinct genera, except a small deer, there were two families remarkable for combining the peculiar characters of the ordinary ruminants and hogs. They are regarded by Prof. Leidy as ruminating hogs. "Like the domestic hog, they were provided with incisors and canines, but the grinding teeth are constructed after the same pattern as those of all living ruminants." The writer of this article has in his cabinet a specimen of the *Oreodon Culbertsoni*, presented by his friend, Prof. Hayden, in which the peculiar characteristics of the teeth described above are fully carried out. It is a most singular and remarkable combination of the dental organs of the hog and a ruminant.

There were also a number of species and genera of the camel family, the largest of the Niobrara being about the size of the existing Arabian camel.

Of the Pachydermata (classified under the Artiodactyla, Perissodactyla, and the Solidungula), there were several allied to the domestic hog, "one above the size of this animal, another as large as the African Hippopotamus, a third not much larger than the common cat." There

was an animal allied to the tapir, now living in tropical America; also three species of rhinoceros. These, with two other species, described by Prof. Leidy, which formerly lived in Texas and California, ranged from a small hornless species about the size of our black bear, to the largest, which was about the size of the existing unicorn rhinoceros of India. There was a species of mastodon (different from those which subsequently roamed over the continent of North America), together with a large species of elephant. The most numerous of the Pachyderms were the different varieties of horses, Professor Leidy giving the names of twenty-three species which formerly inhabited North America, and ranging from the size of a Newfoundland dog to that of the English dray horse. Although no horses were found by the Spaniards when the New World was discovered by them, the evidence is unquestionable that at a much earlier period than the advent of man horses were very numerous, and then became extinct.

The Rodentia or Gnawers numbered six species, including the hare, squirrel, beaver, rat, and the porcupine. The only evidence of the existence of the last-named animal was two isolated molar teeth of a rodent animal differing from any of the preceding discovered by Prof. Hayden, in company with the specimen *Castor tortus.* They apparently indicate a species of porcupine, but in structure are different from those of the recent American porcupine.

The Insectivora are represented by the remains of two genera which were discovered by Prof. Hayden in his last trip to the Mauvaises Terres, in the summer of 1866.

The concluding part of the work, under the head of "Synopsis of Extinct Mammalia of North America," includes the synonymy and reference to the principal authorities on this important subject. Though mainly a synopsis of extinct mammalia, as expressed in the title, it also includes notices of certain mammals still in existence, but whose remains have been found in association with those of extinct species.

In concluding this hasty and imperfect sketch of the contents of the work, it is due to Prof. Leidy to say that his labor has been performed in the most faithful and conscientious manner. Of the time and labor expended in the preparation of such a work few can have a conception; and the extended and thorough acquaintance with the researches and discoveries of the past in palæontology, combined with the minute knowledge of comparative anatomy which is demanded in recognizing resemblances and differences between animals when determining the nature and habits of beings that were born, lived, died, and became extinct ages long past, can only be properly appreciated by those who have worked in such fields.

Having no theory to sustain and none to subvert, with one object only in view, the presentation of an accurate description of objects which

were subjected to prolonged, careful, and critical examination and comparison, Prof. Leidy has produced an invaluable work of reference for the comparative anatomist and palæontologist, which will stand as an enduring monument of his labor, patience, and ability.

It is claimed that geologically America is the Old World. As yet the results obtained in that field, and its kindred science, palæontology, have been exceedingly limited in comparison with what will be accomplished in the future.

To those efforts, bearing in remembrance the prominent and indispensable part the teeth occupy in determining the character, habits, and species of extinct animals, it is to be hoped that the members of the dental profession will contribute their aid in a manner which will advance the interests of science and reflect credit upon our calling.

J. H. McQ.

Manual of the Discovery, Manufacture, and Administration of Nitrous Oxide, or Laughing Gas, in its Relations to Dental or Minor Surgical Operations, and particularly for the Painless Extraction of Teeth. By F. R. Thomas, D.D.S. Philadelphia: Published by S. S. White, 1870.

A copy of the above has been received from the author. It is a *brochure* presenting in a brief and succinct manner a description of the discovery, manufacture, and administration of nitrous oxide.

The author objects to the liquefaction of nitrous oxide on the ground that "the difficulties attendant upon this liquefying process are well known, and render any attempt to make it practically useful doubtful if not impossible."

In response to this it has been conclusively demonstrated that the liquefied gas can be made practically useful. Dr. Thos. W. Evans exhibited a bottle of the gas in that condition at a *séance* at his residence in Paris, in 1868, and subsequently carried a bottle to England, where the gas was administered to patients in the London Dental Hospital by Mr. Clover, and teeth were extracted, by Mr. Chas. James Fox, under its influence. The latter gentleman made several ineffectual efforts to obtain a supply of the liquefied gas from the maker in Paris, and then applied to Messrs. Coxeter & Son, manufacturing chemists, of London, who, after considerable persuasion on his part, concluded to engage in its preparation, and are now ready to supply the profession with bottles containing fifty or one hundred gallons of the gas. Mr. Fox, who has taken a very great interest in the introduction of nitrous oxide in England, at a recent meeting of the Odontological Society of Great Britain, exhibited a bottle of the liquefied gas. One of the members expressed much apprehension that the gas would explode and do considerable damage, if not prove destructive to life, and that the warmth of the hand applied to the bottle would be sufficient to cause the

explosion. This ridiculous objection was met by the statement that the strength of the bottles had been thoroughly tested in every way, and that the advantages of the gas in this form over all others consisted in its portability, absolute purity, and economy. In a paper "On the Use of Nitrous Oxide Gas as an Anæsthetic in Surgery, with Coxeter's Liquid Gas," originally published in the *London Lancet*, and subsequently republished in the *British Journal of Dental Science*, of which he is editor, Mr. Fox presents the claims of the liquid gas to the dental and medical professions.

Dr. Thomas states that in his experience nitrous oxide loses much of its potency by being kept over four or five days, as "it becomes very much deteriorated by the absorption and loss of oxygen," and that he has "witnessed instances where patients had inhaled gas kept for several days, and it seemed the process might be continued indefinitely without producing any impression except partial intoxication. I have also had patients visit my office directly from others, who assured me they had inhaled unusually large quantities of gas and found it inoperative, and they had been informed by the operator that nitrous oxide in their case was inefficient. Upon the administration of fresh gas to these, I found they were as easily brought under its influence as others, proving conclusively that they must have inhaled impure gas, or that its administration had been improperly managed."

In directing attention to the remarkable exemption from fatality which has characterized the administration of nitrous oxide, the doctor cites the following case: "In the year 1869 I made a narrow escape from the charge of being accessary to the death of a patient. A lady called on me with the request that I would come to the residence of a Mr. M. B. S., on Twentieth Street near Vine, to administer the gas and extract some teeth for him, at the same time stating his invalid condition and inability to go about. Being very much occupied at the time, and obliged, by previous appointment, to leave the city that afternoon, an engagement was made for the next morning. On returning to the city I immediately proceeded to the residence of the gentleman. Crape on the bell-knob indicated death in the family, and on inquiry I was informed that Mr. S. had died during the night. The case is important in its relation to the safety of this agent, for a similar experience is likely to occur at any time. I feel very positive that, had the gas been administered to this gentleman on the afternoon previous, the blame would have been cast upon it, and the public would have had an additional reason for prejudice against its use."

The remainder of the work is devoted to the methods to be adopted in the resuscitation of patients in cases of impending death from asphyxia; suggestions in regard to extraction, etc. The text throughout is in a plain, comprehensive style, and illustrated by a number of engravings.

J. H. McQ.

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

Physiological Action of Nitrous Oxide, as shown by Experiments on Man and Lower Animals. By R. Amory, M.D., Longwood, Brookline, Mass.—From a long and interesting paper on this subject in the *New York Medical Journal* for August, which we should like to give in full if space permitted, we present the following extracts as embodying in the main the author's views. After detailing some experiments to determine the quantity of carbonic acid exhaled and the mode of death from nitrous oxide, he says: "These experiments all show that death is caused by asphyxia, and not by paralysis of the central organ of circulation, nor probably by venous congestion.

"Two or three times it has happened to me, when I had thought an animal dead from asphyxia, after the inhalation of this drug, to be surprised by voluntary respiration recurring, after I had removed the muzzle. In fact, I have now two dogs alive, who have not respired for one whole minute several times when undergoing an experiment. Never has an animal died unexpectedly, and it was always very difficult for me to cause asphyxia, if the smallest modicum of air passed into the lungs.

* * * * * * * *

"This was the point which I thought proved by these experiments, that the gas, though perfectly respirable (that is, capable of passing into and out of the lungs), yet would not deliver up its oxygen to the blood,* nor cause the elimination of as much carbonic acid from the blood as if atmospheric air or pure oxygen were respired. I should consider this effect upon the capillary system to be caused by the non-aeration of the venous blood in the lungs. This fact, I have since learned, has existed as a theory of the mode of action of nitrous oxide, though I was not aware of this until my investigations were concluded.

"The act of respiration in warm-blooded animals consists of an interchange of oxygen and carbonic acid by means of the blood in the lung-tissue. It is also well known that if a gas deficient in oxygen, or which contains oxygen combined with another gas in such proportions as to be with difficulty decomposed, be presented to the pulmonary tissue, oxygenation of the blood is not accomplished, and asphyxia is produced. In the asphyxia caused by protoxide of nitrogen, the process of respiration ceases after inspiration and before expiration. If, now, the heart has not ceased its pulsations, and the thorax be compressed, forcing out the gases contained in the lungs, voluntary respiration, with the act of expiration, will recommence and the vital functions be restored.

"I have observed that the cardiac pulsations persist for a long time after the cessation of the respiratory function, and that a rabbit, supposed to be dead fifteen minutes before, was picked up and thrown on to the table before proceeding to an autopsy, and immediately began to respire, and lived several days, until the exigencies of a subsequent experiment demanded the sacrifice of its life.

* If Dr. Amory would examine the urine after the use of nitrous oxide, he might find reason to change his opinion.—Z.

"I do not think that death, following the inhalation of this gas, is due to syncope, though I am well aware that Professor Brown-Séquard states that this condition may be caused by a capillary stasis. The following observations confirm me in this belief. The capillary stasis is only transient, and seems to depend upon the defective respiration; for, as soon as that is restored, the stasis is relieved, as we should naturally expect in the state of asphyxia. Finally, the motions of the heart are not paralyzed till some time after the cessation of respiration.

"The anæsthesia is caused by an insufficient oxidation of the tissues by means of the blood. If, now, the lungs be forced to receive this gas, they inspire it without decomposing the oxygen, and death ensues from asphyxia; or, if air be allowed, the animal revives, quickly regaining its consciousness, sight, hearing, sensation, and muscular powers in the same order. Generally there is a period of three or four minutes after respiring air, that loss of sensation persists. If the gas be reapplied before the expiration of this period, the loss of sensation may be kept up for a longer time, and so on, as in the administration of ether. Now, in order to show that my explanation in regard to this agent is not only plausible but evidently a true one, notice these facts. When a person faints from breathing an impure air, the respiration is imperfectly performed, the face and skin are remarkably pale, and there is a loss of sensation. When a person experiences the partial effect of drowning, the same phenomena as are observed after inhaling this gas are noticed, viz., numbness, buzzing in the ears, and a rather agreeable sensation all over the body, resembling, as near as we can express it, that produced by tickling the whole surface of the body. * * * *

"The blood, owing to an insufficient supply of respirable oxygen, accumulates the pre-existing amount of carbonic acid in the blood, and in this way causes an arrest of capillary circulation. Having proceeded thus far in my writing, I came across, *accidentally*, a lecture of Prof. George Johnson, in the number of the *Medical Times and Gazette* for April 3, 1869. I am exceedingly surprised to see a confirmation of his theory in regard to the anæsthetic action of nitrous oxide. What he has arrived at by careful reasoning, I have been able to obtain by actual experiment.

"For example, he says:

"'Nitrous oxide is a rapidly-acting anæsthetic, causing complete unconsciousness in less than a minute. At a high temperature it is an oxidizing agent, but at the temperature of the body it gives up no oxygen, and is exhaled again unchanged. When inhaled in place of atmospheric air, it rapidly replaces the oxygen of the blood, and, this being done, the functions of the brain are completely suspended, and there is a state of profound coma, which quickly passes off when air is again allowed to enter the lungs;' * * * 'there is no reason to conclude that the inhalation of either nitrous oxide or nitrogen causes an accumulation of carbonic acid in the blood.' Before this he says, 'to produce oxidation of the brain, there must be (1) a free current of blood through the capillaries of the brain; (2) the blood must be duly aerated or oxygenized; (3) the blood must be unmixed with any material which prevents or impedes the giving up of oxygen from the blood to the tissues.'

"If we accept these three rules for the preservation of the nerve-functions, of course, if one be wanting, the nerve-functions are sus-

pended. Now, the experiments XIV., XV., and XVI., taken in connection with the accompanying sphygmographic traces, show an increase of capillary tension, with, as we should suppose, increased number of arterial pulsations; but, finally, *arrest* of capillary pulsation in the brain. At this stage anæsthesia occurs. When the pulsation recommences and the tension falls, consciousness sets in. This effect, then, is a violation of Rule 1. Again, the blood having no oxygen to give up in the capillary system, there is a violation of Rule 3. * * * *

"A fact at one time inexplicable to my mind is now perfectly comprehensible. I noticed that, during anæsthesia from this agent, the carbonic acid eliminated was two-thirds of that during consciousness, before the inhalation; while, immediately after the inhalation and during consciousness, the carbonic acid eliminated was one-third only of that during the anæsthesia.

"Now, it seems to me reasonable to consider that during the anæsthesia the free carbonic acid in the lungs is given off, and, until the stagnation in the capillary circulation is attained, there is only a modification of combustion. When this capillary stasis occurs, there is no combustion, and temporary death to the nerve substance is effected. On the inspiration of air the combustion is resumed and the product of oxygenation or combustion, viz., carbonic acid, does not *immediatelg* appear in the expired air. The nitrous oxide must be eliminated first.

"The interference with the respiratory functions is previous to the stagnation in the capillary system; and, therefore, this latter effect is due to asphyxia, which, if continued, produces death. Now, if this state be prolonged beyond the time that the process of oxygenation in the blood can be resumed, you cannot restore the animal to life. Provided, however, the central organ of circulation, viz , the heart, has sufficient power to overcome the inaction in the capillary system and the lungs receive pure air, or still better, oxygen, life can be restored. There is, in other words, no poisonous agent in the blood. There is simply a functional arrest of capillary circulation. * * * * * *

"In an operation requiring but fifteen to twenty minutes I should prefer to use this gas to ether, provided that the pain of the operation is not to be too severe afterward. If the administrator of the gas has had experience, I can see no objection to its use, in any case where an anæsthetic is indicated, for a few moments.

"The different stages of etherization" (insensibility ?) "can be easily attained with this as with any other anæsthetic, and the life of the patient is entirely under the control of the person administering the gas. I do not speak as an enthusiast. I commenced these investigations feeling that I was concerned with a dangerous anæsthetic, which was too commonly used by dentists and quacks. I believe it to be as innocuous as any anæsthetic, provided it be pure and given by an experienced person."

—

Death from Chloroform.—In one of his able lectures on this subject (*Medical Times and Gazette*), Dr. B. W. Richardson says there are four modes of death from chloroform, viz.: 1st, by *syncopal apnœa;* 2d, from muscular excitability, *epileptiform syncope;* 3d, *paralysis of the heart.*

"The fourth mode of death is a compound death; there are in it two factors, *depression from chloroform, and surgical shock.* The com-

bination may be in two or three ways. In a few instances of death, hemorrhage has brought to a fatal degree a depression which had commenced during and from the administration of chloroform. The death here is by syncope, and is often sudden. In other cases the patient has not been fully narcotized, and in a half unconscious state, feeling the pain of the operation, has become faint and died from syncope. In this case again the death is sudden. Dr. Marshall, of Mortlake, has particularly directed my attention to this mode of death, and has dwelt, I think with force and truth, on the errors sometimes committed, first in supposing, in the case of small operations, that it is only necessary to administer a little narcotic vapor, and, secondly, in proceeding to operate while the patient is excited and not insensible. There have been several deaths at this juncture of the first step of an operation during the first degree of narcotism. Finally, under very deep narcotism, carried near to or into the fourth degree of insensibility, death may take place from severity of shock, incident to operative procedure. I have noticed always in administering an anæsthetic to deep anæsthesia during the performance of the operation of ovariotomy, that when the operator first puts his hand into the peritoneum, or when he uses the sponge to clear out the abdominal cavity, there is an alteration in the beat of the heart, a quickness of beat with feebleness, and even with intermittency. I remember also a case where, in order to break up firm adhesions in the knee-joint, I administered chloroform to a lady to the degree of complete muscular prostration, while Mr. Wm. Adams made sharp and forcible bending of the joint. With each act of the operator in this case, the pulse stopped for the moment as if it had been mechanically arrested, and then after a pause recommenced its beat. It was necessary on three separate occasions to perform the operation thus named, and on each occasion the phenomenon described was equally well marked.

"The case of death under chloroform, which recently occurred in Scotland, when Sir James Simpson administered the vapor, was, I conceive, an instance in which the fatal termination was due to the combination of narcotism and surgical shock."

"*Nitrate of Amyl.*—A correspondent of the New York *Medical Gazette* says: Guthrie, who investigated the properties of the nitrate of amyl after the discovery of it by Balard, proposed it as a resuscitative in drowning, suffocation, and protracted fainting. It would seem worthy of a trial in the threatened syncope from chloroform; since the inhalation of but a few drops is followed by marked acceleration of the heart and flushing of the face. The writer poured about eight drops upon a towel, and, as an experiment, snuffed it two or three times, when immediately the radial pulse became accelerated, the heart throbbed with much force, and the pulsation of the cranial vessels became almost painful. At the same time there was a decided tingling of the ears. The symptoms lasted but a few moments, the tingling remaining after the circulation had become quiet."—(*Boston Med. and Surg. Jour.*)

"*Ozone Ether.*—This air disinfector, which is exciting great interest, consists of a solution of peroxide of hydrogen in ether, and is prepared by Mr. Richardson by pouring a strong solution of the peroxide into

ether. The latter absorbs a considerable quantity of peroxide, especially if some alcohol is added. The solution keeps well, and is very suitable for sick-rooms, as it is very volatile, and, by the generation of oxygen, acts rapidly, destroying all noxious substances. It is noteworthy that no products of decomposition are formed that would act injuriously upon the respiratory organs."—(*Jour. of Applied Chemistry.*)

"*Morphia Collodion.*—Mix together one part of hydrochlorate of morphia and thirty parts of flexible collodion. The collodion is applied by means of a camel's-hair brush to the seat of neuralgic pains. Should these occur periodically, larger or smaller doses of the sulphate or the valerianate of quinia are to be given besides."—(*L'Union Médicale* and *Med. News.*)

"*Carbolic Acid as an Anæsthetic.*—Erasmus Wilson, Esq., says he often uses carbolic acid as a local anæsthetic, and always with the most satisfactory result. He very commonly employs it previously to the application of caustic to lupus and epithelioma. It benumbs the surface, it dulls the excessive sensibility of the superficial nerves, and it thereby permits the caustic action of our remedies, with a great reduction in the amount of pain."—(*Journal of Cutaneous Medicine and Diseases of the Skin* and *Amer. Practitioner.*)

"*Antiseptic System in Surgery.*—At a recent meeting of the Medical Society of Berlin, the leading surgeons of that city recorded their experience of the carbolic acid treatment of wounds and injuries. Professor Bardeleben stated that, in two hundred and forty-two cases then in hospital, the success of this treatment was fully confirmed. Fifty of these were serious cases; and three of them were compound fractures, which, but for Lister's method, must have been amputated. He had found very good results and less irritation from the use of sulphocarbolate of zinc, as employed by Mr. Wood, of King's College Hospital. Professor Langenbeck stated that, although at first he had the greatest distrust of Lister's method, yet two years' experience of it had now so convinced him of its utility, that hardly any operation was now performed in his clinic without the use of carbolic acid. He also had recently two compound fractures of the leg, which, according to still prevailing doctrines, should have been amputated, but had both run a favorable course under the carbolic acid treatment. Professor Lister, commenting on this discussion in the current number of the *Edinburgh Medical Journal*, observes that the 'poisonous action' with which M. Bardeleben has met in one of ten cases, has not occurred at all in his own practice since lac-plaster was substituted for the paste. The local irritation complained of he ascribes to the omission of the use of a 'protective' to guard the wound from the direct action of the acid."—(*Brit. Med. Jour.* and *Med. Gazette.*)

Grafting of Skin to heal Wounds.—"At a recent meeting of the Paris Surgical Society, M. Marc Sée related a case of what he termed 'epidermic grafting.' The patient had his arm caught in some machinery, the soft parts of the anterior and external portions of the forearm and of the elbow being lacerated and crushed, the bones not sus-

taining any injury. The wound was dressed with pure alcohol, and its surface, after the elimination of the superficial portion which became gangrenous, was covered with granulations. M. Sée then took two small shreds of epidermis detached from the inner side of the arm by means of a lancet, and applied them to a prominent part of the wound. Some days afterward a new graft was formed by depositing on the surface of the wound epidermic particles obtained by scraping the cutaneous surface of the arm with a lancet. The same day, M. Reverdin, an *interne*, who is the inventor of this form of grafting, applied to the wound several small epidermic shreds taken from the leg and kept *in situ* by a strip of diachylon. In a day or two these different grafts had taken hold, and soon after the epidermic islets extended and united, so as to produce cicatrization over a notable portion of the wound. The process of proliferation of epiderm cells replaces that of suppuration at the points invaded by the islets, so that the process of healing is considerably expedited."—(*Med. Times and Gaz.*)

—

Bioplasm.—Prof. Lionel S. Beale happily applies this term in the *Quart. Jour. Microscopical Science* to designate "the living, or germinal self-increasing matter of living beings, Bioplasm (*βιος*, life; *πλασμα*, plasma). Now that the word Biology has come into common use, it seems desirable to employ the same root in designating the matter which it is the main purpose of biology to investigate. Bioplasm involves no theory as regards the nature or the origin of the matter. It simply distinguishes it as living. A living white blood corpuscle is a mass of bioplasm, or it might be termed a bioplast. A very minute living particle is a bioplast, and we may speak of living matter as bioplasmic substance. A cell of epithelium consists of bioplasm or bioplasmic matter, surrounded by formed non-living matter, which was, however, once in the bioplasmic state. In the same way a germ of a fungus, as the yeast particle, consists of the bioplasm with an envelope of formed materi al, which last has resulted from changes occurring when the particles upon the surface of the bioplasm died. The bioplasm of the microscopic fungus or other organism may give off diverticula which may become free independent bioplasts. Each minute bioplast may grow, and in the same way give rise to multitudes of other bioplasts."

—

Cell Division in Inflamed Tissues.—In a paper on this subject (*Quart. Jour. Microscopical Science*), "S. Stricker describes his method of 'draining,' by which he is able to keep tissues alive for some time under the microscope, and so observe changes due to living processes. Draining consists simply in passing in fresh blood serum at one side of the glass cover, and sucking it out at the opposite side by means of a fine glass tube, so as to produce a circulation of nutritive oxygen-bearing fluid. It was suggested to Stricker by Ludwig's and Schmidt's experiments on the muscles. By this method Stricker has been able definitely to witness and to assert the division of cells. He has seen the division in inflammation of corneal cells, and also of certain cells in the tongue of the frog—a phenomenon which no one two years since, when challenged by Cohnheim at the meeting of German physicians and naturalists, could say he had seen."

"*Method of Mounting delicate Tissues.*—Dr. Macintosh, of Murthley, whose beautiful book on Nemertean worms we elsewhere notice, has used the following method in preparing and preserving sections of these worms for the purpose of studying the tissues. He hardens in alcohol, and after making sections carefully, washes in water. Superfluous water being got rid of, a drop or two of a concentrated solution of the chloride of calcium is added, and the cover-glass immediately cemented down. No cell of any kind is used, and some preparations have been kept thus for four years. Those who know the delicacy of the tissues of invertebrata will highly value this method, which enables the observer to retain his preparation unchanged by the too great clarifying power of glycerin or resins."—(*Quart. Jour. Microscopical Science.*)

—

"*Method of Staining and Mounting in use at Vienna.*—The section of tissue to be mounted is cut with a simple broad razor (the large knives specially made are not to be recommended), well covered with alcohol or water, as the case may be—the tissue being imbedded in a mixture of wax and oil poured into a small paper tray if necessary. The section is then placed in a solution of carmine in ammonia, from which the smell of ammonia has disappeared, till sufficiently stained, *i.e.* three to twenty minutes. Then it is well washed in distilled water, agitated by blowing into it through a glass tube; thence for half a minute in a watchglassful of water with one drop of acetic acid added thereto; thence into absolute alcohol. After ten minutes in this, all the water being extracted, it is placed in oil of cloves, which completely clears it in a minute or two; and then is mounted in solution of gum Damar in turpentine—such as is sold by artists' colormen. This method is used by Meynert, the great student of brain-structure at Vienna, and in the laboratories of Stricker, Klein, Brücke, Wedl, and Rokitansky. Dr. Klein cuts, stains, and mounts sections of the hen's blastoderm in twelve minutes by this process. Glycerin is often used to mount in after carmine staining, but is found not to keep so well. Glycerin is used for mounting gold and silver-stained preparations, but does not preserve them for more than a few weeks or months—the staining becoming at length diffused and uniform throughout. Any one who would suggest a means of permanently preserving the beautiful silver preparations of cornea and lymph-capillaries, etc., would perform a great service, and confer a boon on those who use these admirable reagents."—(*Ibid.*)

—

"*Binocular Microscope.*—At the June meeting of the Royal Microscopical Society, Mr. Stephenson brought forward a new and very ingenious binocular microscope, especially adapted for dissection or other manipulation. This apparatus was fixed to a Ross stand, and the tubes of the binocular are inclined at a convenient angle when the stage is horizontal. The pencil of light from the objective falls upon two right-angled prisms, rounded to fit the tubes and slightly divergent. By their action two images are produced, one for either eye, and the image is reversed in a *lateral* direction. A second prism above the others produces an inversion in the vertical direction, and the image of the object is *erected*, and exactly corresponds with its real position. The definition is very perfect, and the light equal in each tube. The stereoscopic picture is remarkably clear, and free from error

or exaggeration. This new instrument deserves the highest commendation."—(*Student* and *Intellectual Observer.*)

"*Teeth—Development of the Milk and Permanent Teeth in Man.* By J. Kollman, with two plates, eighty-five pages. Köll. u. Sieb. Zeitschrift, 2d part, 1870.—The author of this lengthy paper gives certain conclusions at which he arrives. Every embryonic tooth, he says, possesses a tooth sac. From the string or cord of connection between the original epithelial organ of the primary tooth germ and the enamel organ of the secondary tooth germ, arise certain clublike branches with round cells; these are quite free from any connection with vascular loops, but each bud, or epithelial branch, as the author calls it, can give origin to a tooth Upon this arrangement depends the abnormal increase of the number of the teeth. The second teeth always take their first origin in the median line, never at the side of the milk tooth. Cell metamorphosis in the enamel germ of the second tooth proceeds with extreme slowness. The cell-brood of the oral mucous membrane persists in the remnant of the epithelial organ which is spoken of above as the string of connection (verbindungstrang), and the processes and buds from this cord for years retain the power of starting the development of teeth. Dentes accessorii and dentes proliferi are entirely different in their origin. The *membrana præformativa* is really as such an artificial product. It is, in fact, the young condition of the enamel cuticle, of which some persons have erroneously denied the existence. The cells of the enamel germ become variously modified in the course of development into (*a*) stellate cells of the enamel pulp; (*b*) later they form the innermost layer of the tooth sacculus, after the transformation of the enamel cells, and they take on the character of young connective tissue cells which finally become changed in all those animals with a cement layer on the crown of the tooth into (*c*) bone cells or osteoblasts. The membrana adamantinæ and membrana eboris are best comprehended as lamellar epithelium. The one is produced from the cells of the embryonal Malpighian rete mucosum, the other from connective tissue cells. The enamel arises not by mineralization of the enamel cells, but by mineralization of a substance exuded from those cells. The dentinal processes or threads extend through the whole length of the dentinal tubes, and through their branches. The dentine cells do not calcify, nor is the dentine produced by the calcification of such cells. Interglobular spaces may produce the appearance of a lamellar disposition of the dentine, but are not, as was once thought, the result of a true lamellification. The splitting up of the dentine by weathering into lamellæ does not depend on interglobular spaces. The ivory of the elephant's incisor, in which the concentric lamellæ are so often seen, possesses no interglobular spaces."—(*Quart. Jour. Microscopical Science.*)

Nerves of Salivary Glands. Henry Power, F.R.C.S. (*British and For. Med.-Chir. Rev.*)—"Krause states that in 1863–64 he first, in opposition to the prevailing views, published observations showing that—1, nerve fibres were very numerous in the finest lobules of the salivary and lachrymal glands, the trunks presenting ganglia in both of these glands, and in the pancreas in all mammals; 2, that in the parotid, flattened multipolar cells are present, which might be regarded

as nerve cells; 3, that the doubly-contoured nerve fibres terminate in the salivary glands of the hedgehog in small terminal bodies, the terminal capsules; 4, that the pale nerve fibres ultimately apply themselves to the acini of the glands, and perhaps end in secretory terminal plates. These results led to further research. The presence of the ganglion cells has been established and corroborated by Reich, Schlüter, Pflüger, Bidder, Kölliker, and others: most are bipolar, a few have three poles, but they do not anastomose much, and his present investigations show that these do not belong to the nervous system nor to the connective tissue, but are in all probability connected with the development of the gland. In the salivary gland of the hedgehog and in the pancreas of the cat, the dark-edged nerve fibrils terminate in small terminal capsules, like the corpuscles of Vater. Pale nerve fibres are always present in the salivary glands, and terminate between the acini of the gland.

"M. Eckhard states that, in several experiments in the sheep, he had so completely isolated the parotid, that it only remained attached by its vessels, and yet still found that the secretion continued nearly unaltered; and hence concluded that no cerebral nerves governing the secretion penetrated this gland. Ludwig, it appears, had also noticed the same phenomenon in experiments on the kidney. Recently, however, Herr Loeb having made the observation in Eckhard's own laboratory, that in the *dog* the secretion of the parotid was under the control of the tympanic branch of the glosso-pharyngeal nerve, Eckhard was induced to re-examine the subject in reference to the sheep, especially with the object of ascertaining whether some nerve fibrils might not have escaped his observation. In the first research he placed a canula in Steno's duct, and determined the amount of secretion discharged every five minutes: it amounted to 3·5, 3·9, and 4 grammes. The tympanic nerve was now divided, and the quantity fell at once to 1·0, 1·2, 1·2. Subsequent section of the sympathetic produced no alteration in these numbers. A second control experiment was performed, in which the tympanum was merely opened, but the ramus tympanicus was not divided; a slight but not very marked effect was produced. The ramus tympanicus was now divided, and the effect immediately became strongly marked; the numbers ran thus: from the duct in the first instance 5·0· after exposure of tympanum, 3·9, 4·0, 3·5, 4.0; after division of tympa ; nerve, 1·8, 1·9, 1·8, 1·9. Professor Eckhard has not been able to ascertain the cause which leads to this depression of the secretory process after section of the tympanic of the glosso-pharyngeal."

—

Tubercular Ulcer of the Tongue. John Chatto, M.R C S.E. (*British and For. Med.-Chir. Rev.* and *Archives Générales.*)—"M. Trélat, believing this form of ulcer of the tongue to be very imperfectly known, presented a paper upon the subject to the Académie de Médecine relating an interesting case that came under his care at St. Louis. We have not space for the details, and it will suffice to say that a young man in good health applied concerning an ulcer of the tongue, which had arisen from some unknown cause. For six months it resisted the various modes of treatment, and at the end of this time signs of pulmonary tubercle began to manifest themselves. Another four months passed away; and when the ulcer, which had become much larger, and then occupied both sides of the tongue, showed signs of great ameliora-

tion under the use of the actual cautery and phenic acid, the patient was rapidly carried off by a 'galloping' consumption. The autopsy exhibited the lungs loaded with tubercles in different stages, and the tissue of the tongue contained numerous granular bodies, which proved on examination to be tubercular. The older authors, when observing ulcerations of the mouth in the subjects of phthisis, attributed their existence to the exhausted and cachectic condition of the patients, and looked upon it as a sign of approaching death. It was supposed never to be met with except in advanced, or at least, confirmed, phthisis. If well-marked phthisis always preceded ulcers of the tongue in these cases, the diagnosis would become much easier than it is. But although this is the general rule, there are exceptions to it, as shown by the present case, and in another occurring in the practice of M. Ricord. In that, seven months after the appearance of the ulcer, the patient, though enfeebled, exhibited no signs of phthisis, which did not present themselves until some weeks later. Another remarkable point illustrated by this case is the occurrence of tubercles, or rather, gray granules, in the tongue itself, these becoming ulcerated. Hitherto such ulcers have been regarded as only the result of cachexia and defective nutrition. In this case microscopical examination determined that not only were they ulcers occurring in a tubercular subject, but ulcers of tubercles. It is very possible that both varieties of ulcers, cachectic and tubercular, may be met with in the mouths of the subjects of phthisis; but M. Trélat recollects other cases having the same appearances as observed in the present one, and he suspects that a more exact examination would have shown them to be tubercular. The diagnosis of these cases, as well as their treatment, is very embarrassing, as no sign of the disease which gives the key to their nature is present. The ulcers may occupy any portion of the cavity of the mouth as well as the tongue, and indolent at first, they afterward become painful, but are accompanied by little or no ganglionary enlargement. They are superficial, never having the deep, irregular, indurated appearance of cancroid; but the portion of the tongue which constitutes their base becomes more or less indurated and voluminous, so as to resemble a true tumor. An appearance precedes the ulcers which M. Trélat is disposed to regard as pathognomonic, viz., a round spot from one to four millimetres in size, and of a yellowish color, resembling phlegmonous pus, on the surface of the mucous membrane, one or more follicular orifices being observed in the epithelium. In a few days the epithelium is destroyed, and ulceration is set up. Sometimes several of these spots in different stages of evolution may be observed. Of course the prognosis is very unfavorable in these cases, and they are very rebellious to treatment."

"*Dental Trial.*—A recent trial at Guildhall illustrates the erroneous views patients are apt to take of professional advice and assistance. A gentleman, suffering from toothache and abscess in connection with the roots of one of his molar teeth, applied last December to a dentist of eminence to have the roots extracted, being advised to do so by a country dentist to whom he had in the first instance applied. One fang was safely extracted, but a second was not removed, and the plaintiff and the defendant differed in their view as to the responsibility for this. At all events the patient did not revisit the dentist, but, when the jaw and face became inflamed, consulted his family surgeon, who

treated him, but did not then advise the extraction of the remaining fang or of an adjoining stump. The inflammation resulted in abscess and slight exfoliation of the lower jaw, which required a surgical operation for its removal. The patient, believing that all his sufferings had resulted from the want of skill of the dentist, brought an action in the Court of Exchequer; but at the conclusion of his case the jury interfered, and at once found a verdict for the defendant.

"A question of some surgical interest arose in the course of the trial, as to whether, when acute inflammation of the gum and a threatened alveolar abscess were present, extraction of the roots of neighboring diseased teeth was or was not the proper and best method of treatment. The medical attendant of the plaintiff demurred to this, and expressed his dissent from the doctrine on this point laid down by Mr. Heath in his work on Diseases of the Jaws, a passage from which was read out by the counsel for the defendant. Other witnesses, however, agreed that there was no reason against the extraction of a tooth being performed during the stage of active inflammation of the alveolus; and we believe that some of the leading practitioners in dental surgery were prepared to support this view, if it had been necessary."—(*Lancet.*)

—

"*Removal of the Articular Extremity of the Lower Jaw, with Restoration of Motion.*—Mr. Christopher Heath, University College Hospital, London, and Dr. J. E. Garretson, of this city, both record cases of the removal of the articular extremity of the lower jaw, with complete restoration of motion after a few months. In Mr. Heath's case the condyle was removed on the 16th of June, 1869, and in December the movements are reported to be as perfect as though no disease existed.

"In Dr. Garretson's case the full left half of the bone was removed in January, 1866. The case was lost sight of about one month after the operation, and seen two years later, when motion was found perfect. Both operations were for necrosis."—(*Med. and Surg. Reporter.*)

—

"*Soluble Glass.* Prof. Charles A. Joy.—The value of this article for many purposes in the arts, and the want of a popular knowledge of its properties and uses, induces us to compile from the best sources the following paper on the subject, in the preparation of which we shall avail ourselves more particularly of the reports of Professor Wagner on chemical technology, and of the learned researches of Fuchs and Kuhlmann.

"Soluble glass, called also water glass, liquid quartz, liquid silex, silicate of soda or potash, was accidentally discovered by the late Professor Fuchs, of Munich, in the year 1818, in the course of some investigations he was making for the preparation of pure silica. He became more familiar with its properties in 1820, and learned how to prepare it by the solution of silica in caustic potash. Afterward he studied the subject thoroughly and became acquainted with all its properties and uses. In the year 1823, as the theatre in Munich which had been destroyed by fire, entailing great loss of life and property, was rebuilding, the government requested a scientific commission to search for an agent that would render the wood-work and stage appointments incombustible. Professor Fuchs, in association with Dr. Pettenkofer, at once instituted numerous experiments upon soluble glass as the best agent

for this purpose, and the conclusions at which they arrived have been fully confirmed by the subsequent studies and experience of other men.

"According to Professor Fuchs, there are four kinds of soluble glass:

1. Potash glass.
2. Soda glass.
3. Potash and soda glass (combined).
4. Glazing glass.

"Potash soluble glass is prepared by fusing together:

45 pounds of quartz,
30 pounds of potash,
3 pounds of charcoal in powder, and digesting the fused and pulverized mass in water.

"Soda soluble is composed of:

45 pounds quartz,
23 pounds calcined soda,
3 pounds charcoal.

"Or, according to Buchner, more economically of:

100 pounds quartz,
60 pounds calcined glauber salt,
15 to 20 pounds coal.

"There are several ways of making the third variety of combined soda and potash soluble glass. By fusing seignette salt (tartrate of potash and soda) with quartz; by employing equal equivalents of nitre or Chili saltpetre and quartz; fusing cream of tartar, Chili nitre, and quartz; or by melting at once:

100 pounds quartz,
28 pounds purified potash,
22 pounds calcined soda,
6 pounds charcoal powder.

"For technical application it is possible to mix three volumes of a concentrated potash glass solution and two volumes of a soda glass solution.

"The fourth variety, called glazing or fixing glass, is made by mixing perfectly saturated potash glass with soda glass, and is used for producing fast colors in stereochromy and fresco painting.

"There is also a wet way for the manufacture of soluble glass, which consists in dissolving flint stones in concentrated soda lye in iron boilers under 7 or 8 atmospheres of pressure, and for this purpose infusorial silica or tripoli is also specially adapted. The tripoli is first calcined to destroy all organic matter, and then introduced into boiling soda lye of 1·5 specific gravity, or potash lye of 1·135, and afterward clarified by a little water lime and evaporated to the required consistency. As soluble glass readily absorbs carbonic acid, it must be kept in closely-stopped packages. The strength of the solution is estimated in degrees founded upon the package of dry powder dissolved in the water: 33° means 33 parts dry glass and 67 parts water; 40° = 60 parts water and 40 parts soluble glass. In applying the solution to wood-work, roofs, fabrics, porous stones, etc., it is necessary to begin with a weak solution and to wait until it is thoroughly dry before putting on a second coat. The second application can be considerably more concentrated than the first. It will not adhere to freshly-painted surfaces, but when the oil is thoroughly dry and changed in the sunlight, the water glass can be used with impunity. Care must be ob-

served to wash out the brush thoroughly after use, to prevent its hardening to stone. Soluble glass protects wood from the influence of fire, water, and the atmosphere. The surface of wood is covered with glass, and not only will not take fire, but is less liable to decay. Some varieties of wood are apt to be discolored by the solution; oak and beech are the least affected. As the soluble glass when applied to wood serves a purpose analogous to a varnished surface, it is necessary to avoid a too concentrated liquid, as otherwise it is liable to scale off. One pound of 33° solution, diluted with five pounds of water, is found to cover wood very well. Wood, paper, linen, and straw, when covered with several coats of soluble glass, are no longer inflammable, but simply char when exposed to fire. A coating of glass also prevents the decay and rotting of wood, and keeps out worms. Beer barrels, butter firkins and milk tubs can be easily kept clean when painted with soluble glass, and the same is true of vessels designed to hold sugars, syrups, wines, petroleum, etc. The most important use of soluble glass is its application to surfaces of stone and mortar. For this purpose it is necessary to impregnate the surface with a solution composed of one part 33° and three parts rain water. For this purpose a powerful pump or syringe with a spout like a watering-pot is used for injecting the liquid, in the form of syrup, into the pores of the stone or mortar. The surfaces thus prepared are in condition to receive the further coating of liquid quartz.

"Mortar and porous limestones react upon the soluble glass, producing carbonate of lime, hydrate of lime, and ultimately silicate of lime, which thus presents an impervious, vitreous surface, capable of resisting the action of moisture and the atmosphere, and is in a proper state for fresco painting in mineral colors. Organic colors are apt to be destroyed by the alkali of the soluble glass, and hence, for fresco painting, mineral paints are alone available. A second coating of paint, rubbed up with soluble glass, is usually sufficient for all practical purposes, and a wall thus treated can be washed with soap and water, and kept thoroughly clean. A plain white color is obtained by mixing chalk with soluble glass. Zinc white and silicate of soda set so rapidly that it is necessary to add one fourth to one-half its weight of precipitated sulphate of baryta before applying the color. Baryta white and soluble glass also afford a good, fast color. Fluor spar, with pulverized glass and soluble glass, also gives an exceedingly solid mass. The pigments that have been found by experience to serve the best purpose are chromate of zinc, sulphide of cadmium, blue and green ultramarine, Schweinfurth green, oxide of chromium, cinnabar, etc. Prussian blue and colors prepared from it and chromate of lead will not answer, as they are destroyed by the alkali, the same as organic colors. It is well known that the fresco painting in the capitol at Washington, in the new museums in Berlin and Munich, are done with water glass, and that the success in their use is complete.

"Soluble glass, with or without colors, adheres closely to such metals as iron, zinc, and brass, and protects them from the influences of the air and water. It has been found that when stoves are painted with a mixture of soluble glass and black oxide of manganese, a species of flux is produced by the heat which does not scale off, but thoroughly protects the iron from any corroding action. Plate glass, when coated with

the soluble silicate, becomes opaque, and when baryta is mixed with the liquid quartz it assumes a fine, white appearance. If the glass be heated it becomes enameled, like porcelain, and fixed colors, such as ultramarine and oxide of chromium, open up an extensive application for soluble glass for transparencies, church windows, etc. The manufacture of artificial building stone by means of soluble glass has been conducted in Germany and England on an extensive scale. In Vienna, barracks of an enormous size have been constructed of such artificial stone, and the tower of the Cathedral in that city was put into thorough repair in the only way that was possible, considering the great height of the tower and the extent to which it had fallen to decay.

"When ground chalk or marble is stirred into a paste with soluble glass, the mass becomes so hard that it can be employed for building purposes, or for the restoration of decayed stone structures.

"Marble and dolomite immersed in a solution of soluble glass, and the operation repeated a number of times, take up an appreciable quantity of silica, and become so hard that they are capable of taking a fine polish. Attempts to employ such stones for lithography have been made, but not altogether with success. Artificial stone can be prepared as follows:

"Well-washed and gently-heated sand is stirred into a warm solution of soluble glass, until a proper consistence has been reached for pouring it into a mould. After it has set it is removed from the frame, which ought to have been previously oiled, and is left to dry in an airy place. To avoid too great a consumption of water glass, a stone or brick can be put in the center of the mould. It is also possible to stir in pebbles and to use earthy colors in imitation of marble and conglomerate. Such artificial material becomes very hard, and is adapted to pavements, hearths, and building purposes.

"Soluble glass can be used in the manufacture of paper hangings, for printing on paper and woven fabrics, for attaching gold and silver powder to any kind of object.

"Hydraulic lime can be prepared by mixing in fine powder 10 to 12 parts by weight of dry soluble glass and 100 parts of lime. This affords a ready way of preparing a hydraulic cement from ordinary lime, which is always available.

"One of the earliest and best-known uses of soluble glass is as a cement for glass, porcelain, and metals. It is put up in small packages for this purpose, and sold on the corners of the streets under various names. Pieces of glass or porcelain cemented in this way will break more readily in places which were whole than where they were repaired. The solution ought to be quite concentrated when employed for this purpose. The fragments to be repaired must be heated to the boiling point of water, and both surfaces be then moistened with the cement and pressed closely together and held in position by a strong cord, and left to dry in a warm place. By mixing sulphate of magnesia or calcined magnesia and soluble glass, a cement can be formed that can be cast into moulds, and very generally be substituted for meerschaum.

"Soluble glass has been used in restoring several European churches, also the Houses of Parliament in London.

"Wood and timber, and other porous substances, after being boiled for several hours in soluble glass, then exposed in tanks containing lime-

water or chloride of calcium and magnesia, and left to dry, become highly vitrified and incombustible. Railroad ties, ships' timber, house and bridge beams, have been treated in this manner with entire success.

"The silicate is also used for penetrating fire brick and clay, and for cementing the walls of furnaces.

"When stirred up with chloride of calcium and used for luting down the covers of crucibles, it answers an excellent purpose.

"Repeated attempts have been made to use soluble glass as a substitute for soap, as well as for adulterating soap, but the reports of a commission in Prussia, where trial was made at the state prison of Spandau, were unfavorable. The detergent properties of the silicate are not very great, and it cannot be recommended, excepting in a few cases where grease is to be removed from the fleece of wool, or some similar cleansing is to be performed. As a species of lubricator, and to preserve the elasticity of leather, soluble glass has a ready application."—(*Journal of Applied Chemistry.*)

—

Soluble Glass, Use of, on Leather.—"Soluble glass has been successfully applied on bands of machinery to restore elasticity and polish, and is found to be better adapted for the purpose than gum arabic or similar substances. Experiments upon the leather straps of a spinning jenny proved entirely satisfactory, and as liquid quartz or soluble glass is now largely manufactured, a fair trial of it is worthy the attention of our machinists."—(*Ibid.*)

—

"*Stereochromy.*—Soluble glass mixed with mineral colors can be used for painting wood, ceilings, and any surfaces that have been covered with oil or whitewash. There is no smell and no danger in its application, and it has the additional advantage of rendering wood and other fabrics incombustible. It has been found that some of the aniline colors, corallin, ponceau, vesuvin, etc., can be mixed with liquid quartz, but it is well in this case to add some glycerin. Prepared in this way, the colors can be used for painting artificial flowers, paper-hangings, pencils, toys, screens, baskets, etc. In fresco painting soluble glass has long been favorably known and extensively applied."—(*Ibid.*)

—

"*Sodium as a Flux for Minerals.*—Metallic sodium is now made in such quantities as to have become a valuable reducing agent in the hands of chemists. We have previously published a notice of its use for the detection of sulphur and phosphorus in compounds, and the same author, Dr. Schonn, now proposes to extend its use to the resolution of minerals in general. A steel crucible, one and a quarter inches deep and the same in diameter, is easily brought to glowing over an ordinary lamp; into this is projected a few pieces of metallic sodium, and afterward the finely divided and dry mineral is added. The crucible is then covered and heated red hot. As soon as the reaction is finished, the contents of the crucible are allowed to cool, and water is cautiously added sufficient for the purposes of filtration. The fused mass is then thrown upon a filter and thoroughly washed. In the filtrate will be found the

electro-negative constituents of the mineral combined with the sodium, such as sulphur, cyanogen, chlorine, chromic acid, silica, molybdic and tungstic acids, and such oxides as are soluble in the soda lye. On the filter will be found the metals and their oxides, also the lower oxides of titanium, molybdenum, tungsten, and possibly silica and alumina. The contents of the filter and the solution in the filtrate can be further treated according to the order of analysis. In this way all minerals can be readily resolved, and their constituents determined either qualitatively or quantitatively."—(*Ibid.*)

Lamp Wick rendered Incombustible.—It is stated (*Ibid.*) "the object in saturating a lamp wick with salt, alum, or any other incombustible compound, is merely to render the wick incombustible, without interfering with the consumption of the oil. The effort made a few years since to render the lighter products of petroleum less explosive by the addition of alum and other incombustible substances proved to be a total failure, merely from the fact that all these incombustible compounds are perfectly insoluble in all the hydrocarbons employed for illuminating purposes."

"*Removing Rust from Polished Steel or Iron.*—Sometimes rust can be removed from polished iron or steel with little difficulty; but sometimes it cannot be made to disappear without polishing the surface anew. Rust is oxide of iron. The oxygen of the atmosphere unites with the iron chemically, thus forming a thin scale on the surface, not one-thousandth part of an inch in thickness. Red rust may be formed on the polished surface a thousand times without materially corroding the metal, provided it be removed soon after it has formed. The usual manner of removing red rust is to cover the rusty portion with common olive oil, and rub it in well with a woolen cloth. After it has stood a few hours, rub the parts with finely pulverized slacked lime, or Spanish whiting, until the rust is all removed. If red rust is allowed to accumulate until the polished surface is corroded, sweet oil and a severe rubbing will seldom remove it. The entire surface must be repolished with emery, or some other grit, before black rust will disappear from polished steel or any other metal."—(*Manuf. and Builder* and *Druggists' Circ.*)

"*Amalgam for Electrical Purposes.*—Those who have occasion to experiment with frictional electricity will be glad to know of a new amalgam, which is much better than the one in common use (two parts quicksilver, one of tin and one of zinc). It is made by melting two parts of chemically pure zinc in an iron ladle, and then carefully adding, while gently stirring it with an earthen pipe-stem, one part of quicksilver. After cooling, an extremely tough, but easily pulverized amalgam, of a silver-white color, is obtained, which may be kept in closed vials for any length of time; and when needed, the necessary quantity is to be ground up in a porcelain mortar, with a little tallow. In the construction of electroscopes, aluminium foil is much superior to gold foil, being equally sensitive, while it is much stronger and less liable to be torn."—(*Boston Jour. of Chemistry.*)

THE

DENTAL COSMOS.

NEW SERIES.

Vol. XII. PHILADELPHIA, OCTOBER, 1870. No. 10.

ORIGINAL COMMUNICATIONS.

THE RUBBER DAM.

BY J. F. P. HODSON, D.D.S., NEW YORK.

Read before the First District Dental Society of New York.

Although the rubber dam has been before the profession for some years, and has, during that time, become an indispensable adjunct to the practice of many operators, a full appreciation of its bounteous and unqualified merits is, as yet, confined to a very small minority of the profession as a whole—chief among the many reasons for which is, that it requires, to become familiar with its workings, and skillful in its application, an amount of patience and perseverance which comparatively few operators are willing to bestow.

There are some marked peculiarities concerning the material in question, which must be *learned* before success with it can be achieved; and a man, failing to acquaint himself with these essentials, and not possessing the requisite amount of perseverance to work them out for himself, uses the dam once, fails of course, flings it aside and declares it forthwith a "great humbug," returning to his napkins and "submarine" operations, with the complacent assurance in his own mind that such operations are the best that can be performed, and in blissful ignorance or carelessness of the fact that it is himself and not the material which is in fault.

I am often led to wonder, after having completed a very difficult or protracted operation, with everything about the tooth remaining as dry as when I commenced—as it always will be if the dam be properly applied—what in the world operators do under such circumstances who do not use the dam, and what *I* ever did without it; for I state what is simply a fact in regard to it when I say, that it is possible to perform operations with perfect success with its assistance, which could not be kept dry by *any* of the other methods employed.

Experience only can enable one to judge as to just which cases to

apply it. As an operator becomes more and more skillful in its manipulation, through practice, he will find the cases to which he *cannot* apply it becoming fewer, and in the course of time discovers that, whether to apply the dam or not to *any* case—perhaps one in fifty excepted—*becomes merely a question of expediency.* Perhaps you will say to this statement that I am enthusiastic. I am ; but my enthusiasm comes from being able to state so triumphant a fact in our science, all-important from what it involves. It means perfect operations, perfect cervical edges, and, not least, entire freedom, to both operator and patient, from that terribly exhausting state of anxiety, and "dangling" condition of the mind and nerves, incident to the use of napkins.

I seldom use the dam for simple cavities in the grinding surface of superior molars, but lay a narrowly-folded napkin or bibulous paper along the gum outside instead. I *do* use it, on the other hand, in almost every case, for the lower teeth, and nearly always for approximal cavities, wherever situated.

Two or three, or, in extraordinary cases, more teeth, should be embraced by the rubber, unless the tooth operated upon is standing isolated from the rest. The holes should be as round as possible—as a sharp angle in them is a tear suggested—and very small, though varying with the resiliency of the rubber—say the size of an ordinary pin's head for a bicuspid, and in this proportion for the other teeth. The distance which the holes should be apart must be a matter of judgment for each case. Where the teeth are near together, they may be within an eighth or three-sixteenths of an inch of each other. Where there is a wedged space and approximal cavity, it is a nicer matter to determine, as you must have sufficient rubber between the holes to allow for both teeth being embraced so snugly as not to admit of leakage, while an excess of rubber would puff up between the teeth, and hide that essentially important point, the cervical edge of the cavity. After the holes are cut, carry the rubber down between the teeth with waxed floss silk, being careful to place the silk as near as possible to the edge of the hole, otherwise the rubber will be torn. It is more convenient to commence with the tooth nearest the front of those which are to be embraced, and apply to each one back of it successively, till all are encircled. The edge which now stands up against each tooth must be turned under, to prevent leakage. This may be accomplished by carrying the floss tightly against the approximal surface of each tooth, and down upon its neck ; then, with a small burnisher, complete the circuit by turning the edge upon the buccal and lingual surfaces. This is all done when the rubber is applied, and does not, in practice, consume one-quarter of the time that it takes me to write it. At the first and last spaces leave the floss, to prevent the slipping off of the rubber.

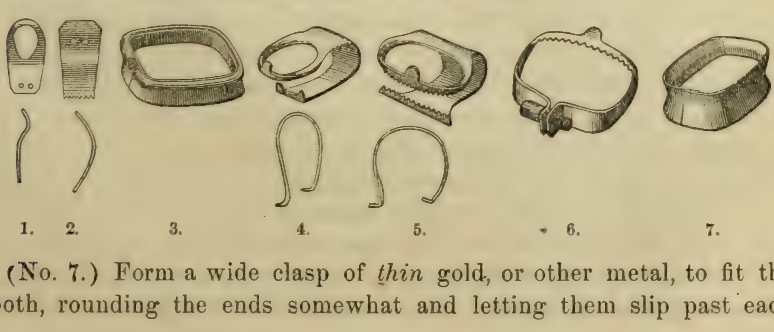
In cases of partially-developed teeth, or those whose crowns are of

too conical a form to retain the rubber unassisted, special appliances will be required. Some operators suggest, for the lower teeth, tying a piece of twine or floss around the tooth over the rubber, attaching a small weight to the ends, and allowing it to hang down out of the mouth. This, to my mind, has many objections, chief and conclusive among which is the fact that when the tooth is sufficiently developed to apply this string-holder, I can entirely dispense with its use, and depend upon leaving the floss between the tooth and gum, as I shall hereafter describe.

The following method I much prefer to the string and weight above mentioned. Take a piece of annealed iron wire, of medium size, and twist it *tightly* around the tooth, and as near its neck as possible, leaving the ends half an inch long, and projecting from the buccal side of the tooth; lift it off carefully, and, having applied the rubber, hold it on with one hand, while with the other you place the wire in position over the rubber, holding that with your finger till, with a large plugger, you push it down on the tooth all around, getting it to catch at some point, if possible; then, holding it down with the plugger on the lingual side, push the projecting ends or "handle" down close to the gum; place finger or thumb upon it, and you are "master of the situation."

The foregoing applies especially to partially-developed inferior molars. If, as is often the case, a thick lip of gum projects over the posterior part of the grinding surface, and is too stiff for the rubber to push back, I excise it and proceed as before. In the great majority of cases, however, with these teeth, there is no difficulty in causing the rubber to retain its place, by carrying floss silk, single, double, or triple, down between it and the posterior approximal surface of the tooth; and if there be a tooth in front of it—which in such cases should also be embraced by the rubber—passing the floss forward from each side, and making it bind around the tooth by crossing it between the two anterior to the one operated upon.

But when these teeth are so little developed as that the difficulty of retaining the dam upon them will not be comprehended by either of the just-described methods, I employ the following:



1. 2. 3. 4. 5. 6. 7.

(No. 7.) Form a wide clasp of *thin* gold, or other metal, to fit the tooth, rounding the ends somewhat and letting them slip past each

other; let it be a trifle flaring from its lateral centre to each edge. The lower side is flared because that portion of the tooth which is below the gum line is larger than that above it, and the upper flare is to retain the rubber; or, if preferred, the upper flare may be represented by a wire soldered around the edge. (No. 3.) Slip this clasp down upon the tooth as far as possible, letting it penetrate between the tooth and gum, and proceed to apply the dam *to this clasp*, after which pack the space between the tooth and clasp with spunk, for the purpose of damming out any moisture from that direction; when, with a finger upon the top of the clasp as a security for its retention, proceed to accomplish the now rendered simple operation of introducing the gold. And just here let me say that this "spunk" that we use is invaluable for stopping, under pressure, any leak—unless it be a very large one—which may occur during an operation from an inadvertent puncture of the rubber. I do not wish to omit mentioning, at this point, and for these operations, a little instrument that I use very often. It is simply a broken excavator bent into the shape, or nearly so, of a very large but short-turned corkscrew plugger, the curve fitting the posterior surface of the tooth, and the part resting upon the gum, at that point, filed to a flat surface. It is held in the left hand throughout the operation, and in the position indicated, there being one for each side of the mouth. It is very valuable in those cases where we have the *combined* difficulties presented of a very unyielding gum and conical shape of the tooth's crown.

At least as difficult cases as these to control are those of gum cavities, whose edges are below the gum line, and for them I have several appliances, according to their position. We will consider, first, an inferior molar, with a gum cavity, large or small, upon its buccal surface. I have for such two or three clasps, of such construction as I shall immediately describe, with sufficient variation in their shapes as to comprehend the more pronounced corners and angles of all molars.

(No. 6.) This appliance is an open clasp, formed from clasp-gold or steel, with the ends left wide and heavy on the lingual side of the tooth, which ends are to be turned outward at right angles to the clasp, for a length of say three-sixteenths of an inch, leaving a short space between the two. A hole is drilled through one of these projecting ends for the easy play of a short and thick screw, and a thread cut in a corresponding hole in the other, to engage with the thread on the screw. This is, as is apparent, for the purpose of fitting the clasp tightly to the tooth. The upper edge of the clasp is to be cut away on the buccal side, leaving it the width of an eighth of an inch or less; the upper side of this turned outwards, and the lower side, which is to engage with the neck of the tooth, finely serrated. On the upper side of this buccal portion is left standing a little ear-shaped piece with a dent in its centre, which is to

be turned down to a horizontal position, and is for the purpose of carrying down this portion of the clasp, under the pressure of an instrument held in the left hand, with its point resting on the ear-piece. The whole clasp should be formed in such a manner as that, when in position, the lower edge of this buccal side shall dip slightly below the corresponding edge of the lingual. In applying it, if the buccal contour of the tooth be irregular, the clasp should be fitted somewhat to these irregularities with the pliers before putting on the rubber; then apply the dam, put on the clasp, and, after stretching the rubber to the edge, hold it and the clasp in position while you turn the screw on the lingual surface, and snugly fit the clasp. It will be found necessary, in most cases of this nature, to hold the clasp down, as before described, with an instrument, throughout the operation, though it may sometimes be dispensed with. This is more especially adapted to gum cavities in those teeth whose buccal contour at the gum line is either very convex or very irregular.

(No. 5.) Where, however, the tooth presents a flat surface at this point, I have a clasp of thin steel, very wide, and going *over* the tooth from lingual to buccal surface, with very delicate teeth cut on the extreme ends, which are turned in, as shortly as possible, to a right angle. Opposite the cavity the clasp is cut out, leaving the smallest possible rim; the external edge of this is to be bent up towards the clasp till that portion which was next the gum is brought to a little above a right angle; the inside edge of the rim is to be serrated, and is to engage with the tooth, below the edge of the cavity. On the outside of the rim, next the gum, is left a small ear, precisely similar to the one described on the last fixture, and for the accomplishment of the same end. (Nos. 5 and 4.) This style of clasp is equally applicable to labial or buccal gum cavities on all teeth, with, of course, the shape modified to suit such cases.

For the front teeth, and particularly the lower ones, there are some cases which this will not reach. For such I employ two or three patterns of the following. (No. 1.) Cut from a piece of plate, of medium thickness, a form resembling the inverted letter V, with a square top, and of such length as that, when laid against the tooth with the ends pointing towards the gum, they shall reach nearly to it on each side; to these ends solder a small but stiff rim, running in front of the tooth at a slight angle downwards to the main piece, the ends of the latter having been previously bent inward somewhat, in order to freely expose to view the cavity between them. In the square top of the main piece are drilled two holes for the purpose of attachment to the tooth. The whole is applied by putting on the rubber, carrying down the approximal edges, as in all similar cases, drawing the rubber to the cervical edge and superposing the holder upon it—after looping a piece of floss silk through the holes in the top, and passing the loop over the tooth, and tying firmly to place.

Where the cavity is an approximal one, and extends under the gum, the wire clasp before mentioned may be made useful for holding the rubber and gum away from the cavity, by threading between the teeth, and twisting it on, after the rubber has been applied; or it may be put on before the rubber, leaving the twisted ends projecting; and, in carrying the rubber to place, pass through the hole which is to embrace this tooth, both the tooth and ends of the wire, and bring the wire above the rubber with a small burnisher.

When teeth have been wedged apart, for the purpose of filling approximal cavities, they are always more or less loose and tender, and it has always been my practice in such cases to insert a thin wooden wedge at the necks, before commencing to operate, for the double purpose of keeping them firm and apart while operating. This wedge, when the dam comes to be applied, may be left in its position, and the dam superposed upon it, or it may be taken out and placed over the rubber. The great objection to the latter method has been, that the resiliency of the rubber, together with the movement of the teeth in operating, do not admit of a simple wedge's keeping its place. This difficulty has been remedied by a little device, suggested to me by Dr. Varney, of this city, and which consists in inserting between the wedge and rubber a T-shaped washer, of very thin metal, the long arm being of a width to pass readily between the teeth, and the inside of the short ones cut to fit the buccal corners of the teeth between which it passes. This appliance is also of great value for exposing all approximo-buccal cavities.

(No. 2.) When, however, the cervical edge of the cavity is so far beneath the gum, and the gum on either side of the approximal surface is so hard and unyielding as that this method shall prove insufficient to surmount the difficulty, recourse is found in the following: cut a strip of clasp plate, of medium thickness, to a width approximating that of the lateral diameter of the tooth; drill two small holes across and near the end; then bend the strip just below the holes to an angle of 45° or thereabouts, and of a sufficient length to reach across the space and to the cervical edge of the cavity. (In special cases,—for instance, if the crowns are long,—it is well to bend up at a slight angle this end for the $\frac{1}{32}$ of an inch, for the purpose of obtaining the essential requisite in the premises, viz., a flat surface pressing the rubber downward and at the same time springing against the neck of the tooth below the cavity, as, if these are not complied with, the teeth will not be held firmly apart, or the rubber will be pressed away from the neck of the tooth, causing leakage.) This end is to be beveled to an edge, and slightly serrated, to prevent it slipping. Now apply the rubber, and after looping a piece of floss silk or fine wire through the holes, lay this part of the spring against the approximal surface of the adjoining tooth; push

the rubber down to the edge of the cavity; superpose upon it the toothed end of the spring, and make fast by tying or wiring tightly around this adjoining tooth. As has been hinted, this appliance will, if properly made, hold the teeth firmly wedged apart while filling,—a very essential matter, and one that must in such cases always be accomplished in some manner, as the dam tends to add to their natural inclination to return to the position which they occupied before wedging.

The matter of turning under the edges that stand up against the teeth is so essential, that I would reiterate the necessity of its accomplishment in all cases and around each tooth; otherwise there will be leakage at these points, the unturned edge being precisely analogous to an open valve and the turned edge to a closed one.

While upon the subject of gum cavities on the labial surfaces of the incisors, I omitted to mention the following: if the cervical edge is but a short distance beneath the edge of the gum, and still so far as that the dam, unassisted, will fail to keep its place, I employ an instrument—of which I have several shapes—held in the left hand, for the purpose, the essential part of which is simply a wide, flat blade, with the edge on its end hollowed out to correspond to the contour of the tooth's neck; this concave sharpened, and, if thought proper, finely serrated, it will be found more convenient to hold, if that side or end of the concavity which is farthest from the hand that holds it is left longer than the other. The particular shape which I find best adapted to all cases is that of an enlarged hatchet excavator.

In regard to the quality or thickness of rubber best fitted for our purpose, it is greatly a matter of taste. The thinner qualities require more skill in their use than the heavy ones, as after the application of the former, if great care is not constantly exercised, particularly in cavities anywhere near the gum, it will be stretched away from the tooth, and the operation flooded. On the other hand, far more delicate presentations are effected through it than by the heavier; besides which, it passes more readily between teeth which are nearly approximated,—indeed, it may be laid down as a rule, in this connection, that it will *follow* floss silk into *any position.* For general use, however, if the thinnest were numbered 1, and the thickest 4, my recommendation would be number 2.

Any sized piece *may* be used, but that which will be found best for most cases is, perhaps, four or five by six inches. And though it may often be applied in such a manner as that the patient may close the mouth and swallow, it will generally be found more convenient for the operator, and to accord better with the taste of most patients, to spread a large napkin or towel over the shoulders, for the purpose of taking up the saliva as it leaves the mouth; or, a double-valved saliva pump may have its nozzle resting in the mouth, the rubber tube from which leads

to the spittoon, when an occasional squeeze of the air-chamber will effectually keep the mouth free from saliva.

The ends of the dam may be held back out of the way by means of a little fixture, invented, I think, by Dr. Coggswell, which is simply an elastic band, with a slide clasp on each end for seizing the end of the rubber, and a contrivance, in addition, on one end, for drawing the band tight, the latter passing around the head. Another method is, to catch the rubber with small hooks, at the end of a piece of twine, on each side, and crossing the ends, to which are attached small weights, on the head-rest behind the head.

When one uses the dam very much, he will find that the constant pressure of the floss silk under the nail of the forefinger—which is the one most used in applying the dam—will keep it in a constantly sore and irritated condition. To obviate this, I cut off an ordinary thimble, so that it shall form a cap for the end of that finger, and then serrate it deeply over the whole end. It can be taken off as the fingers are required to apply the dam from tooth to tooth, by turning that finger to the centre of the hand, and reapplied in the same manner when the floss is taken up.

RECESSION OF THE GUM AT THE NECKS OF THE INFERIOR INCISORS AND CANINES.

BY J. H. M'QUILLEN, M.D., D.D.S.,

PROFESSOR OF PHYSIOLOGY IN PHILADELPHIA DENTAL COLLEGE.

The separation or recession of the gum from the necks of the lower front teeth, due to the deposition of salivary calculus around them, acting as an exciting cause, is a constant source of annoyance to patients, and frequently followed by the gradual loosening and loss of these important organs, if not promptly and properly attended to.

The gum, separated from the tooth, forms one or more deep pockets or sulci, favoring the lodgment and retention of the calculus, which, as it accumulates, keeps up a constant irritation and absorption of the gum.

It is somewhat surprising, in the discussions before the dental societies and in communications to the magazines, to find the presence of phosphates and carbonates of lime in the saliva spoken of as an evidence of a diseased condition of the system demanding constitutional treatment for its correction. The most superficial knowledge of physiology would serve to correct such erroneous opinions. The food, vegetable and animal, taken into the human economy, contains, without a single exception, a certain proportion of these salts, and they are necessary for the maintenance of the integrity of the osseous and dental systems. Evidence of this is presented in fractures. The union which takes place between the broken bones could not be effected were it not for the fact

that an excess of these salts is present in the blood, affording pabulum out of which the provisional and permanent callus is formed. In the absence of these constituents only a ligamentous connection is established between the fractured extremities.

It is necessary that the excess of salts generally present in the blood should be removed from the system. The natural outlets are the various secretions, every one of which, when analyzed, is found to contain a certain proportion of salts. The saliva, bile, urine, etc. hold them in different proportions and combinations.

It does not follow because there are diseased conditions known as the uric and lithic acid diatheses, in which insoluble salts are formed and eventually deposited in the kidneys and bladder as urinary calculi, and in the joints as chalk-stones, that the presence of tartar or salivary calculus in the mouth is to be looked upon as an evidence of disease.

The teeth serve as nuclei around which the calcareous constituents of the saliva naturally collect. The movements of the tongue and lips, and the contact of food in the act of mastication, cleanse, to a certain extent, the surfaces of the teeth. Evidence of this is offered in the accumulation of tartar on the teeth of one side of the mouth when not used in chewing, the mastication being performed on the opposite side. So well marked and unmistakable is this, that an experienced observer can tell at a glance whether one side is used to the exclusion of the other, by the presence or absence of the tartar. Again, I have noticed this condition prevailing when one side of the face has been paralyzed.

Frequent as is the presence of calculi in the gall-bladder and urinary-bladder, they would be still more common, indeed universal, if there were hard substances like bone or teeth attached to the surfaces of those cavities, for they would serve as nuclei around which the calcareous constituents of the bile and urine would accumulate.

From considerations such as these it must be recognized that, however uncomfortable to the person or unsightly to others the presence of tartar may be, it cannot be regarded as an evidence of constitutional disturbance. If it were, indeed, the patient might with very great propriety congratulate himself upon having the accumulations in the mouth rather than in the bladder, as its presence there is not so uncomfortable or its removal so painful and dangerous to life.

In the treatment of such cases as that under consideration, the first indication is to remove the calcareous deposit. The pocket or sulcus formed by the gum should then be slit from the bottom upward, and the tooth smoothly polished, so as not to leave the smallest particles of tartar as nuclei for other accumulations to form. An application of carbolic acid, on a thin slip of wood, such as the holly strips, for instance, to the gum where the pocket had been, acts as an escharotic,

and promotes the formation of healthy granulations, which, in a few days, or a week or two at the best, in healthy organizations, by repeated applications of the creasote, is followed by the restoration of the gum to its normal position. In addition to the remedy named, deliquesced chloride of zinc, or an aqueous solution of nitrate of silver, twenty grains to the ounce of water, may be employed with advantage.

LOSS OF SUPERIOR MAXILLARY BONES.

BY J. A. PERKINS, D.D.S., AMESBURY, MASS.

Mr. A. E. Brown, some five years since, while working in a saw-mill, in New Brunswick, met with a very serious accident, which resulted in the entire loss of the superior maxillary bones, with their attachments, the nasal processes, and palate bones, the stick striking him near the centre of the nose. His injuries at the time were of such a nature, and his prostration so great, that no hope of recovery could be entertained by his friends. But, possessing a remarkably hardy constitution, and fortunate in the attendance of a skillful surgeon, together with good nursing, he slowly recovered. But months, and even years, elapsed before he was able to engage in his usual occupation.

In the mean time the roof of the mouth became covered over in part with a soft structure, adhering to the side and front, but still leaving open a large space, which proved to be a great annoyance. To obviate this difficulty, he was advised to undergo an operation, at the Massachusetts General Hospital, which he accordingly did, last fall,—an incision being made on the side and back of the opening, bringing the parts together. Thus, in this condition, they remained until the fifth day, when a small opening, nearly in the centre, made its appearance, large enough to insert the end of the thumb. The edges of this unfortunate rent soon healed, and became quite firm and capable of resisting considerable pressure.

With this brief description the condition of the mouth may, perhaps, be imagined, when we took the first impression, some two or three months after the operation, for a temporary upper jaw and teeth, together with a temporary lower set of teeth, the few remaining teeth and stumps in the lower jaw having been but very recently removed.

The impression-cup was made of tin, formed so as to adapt itself as nearly as it was possible to the peculiar shape of the upper part of the mouth; and the material used was wax, thinking plaster might flow into the soft and tender parts and be more difficult to remove. The teeth were retained in position, in part, by strong gold spiral springs attached to the upper and lower plates.

Some idea of the amount of rubber employed in the construction of the upper dentures may be conceived, when we state that from the end

of the teeth to the top of the rubber it measured nearly an inch and a half.

We have not time to go minutely into particulars, but will remark that the whole arrangement was a success, not only enabling the man to masticate his food, but also to articulate his words quite distinctly; and perhaps, more than all this, rendering a face that was almost repulsive to look upon one of manly beauty and symmetry. Mr. B. remarked, when he first called on us, that he had consulted more than a score of dentists, in regard to his mouth and the possibility of his having an artificial set of teeth, but all spoke very discouragingly, with, perhaps I may mention, one exception, a brother practitioner in Boston, but whose "terms were too enormous." We do not make this statement intending or wishing to convey the idea that it required any superior skill or ingenuity to succeed with this case, for we regard the whole thing as very simple; but would respectfully suggest that, as dentists, we try and see what we can do with every case. Who knows but what we may succeed with all, and thus be the means of conferring still more lasting blessings upon mankind.

INSERTING A PIVOT TOOTH.

BY L. PHIL. MEREDITH, D.D.S., CINCINNATI, OHIO.

A LADY came to me last fall, wishing a pivot tooth inserted on an inferior left lateral root. I tried to dissuade her, telling her that although the density of the root substance would justify the operation, yet the root itself was so loose, and nature appeared so evidently anxious to get rid of it, that she had better not have the operation performed on account of the liability to subsequent inflammation.

But I might as well have talked against the seasons. She had worn pivot teeth for years, and knew that they were the only kind fit to wear—had been up the ladder whose first round is determination and the last one suppuration, and was resolved to have a pivot tooth at all hazards.

I went to work and fitted a tooth to my satisfaction, except that it was a trifle too long. I proceeded to remove it with a pair of forceps, and got it out easily; but it had something on the end of it, namely, *the natural root.*

For an instant I was startled, and awaited the storm of anger that would be apt to come from a woman of her disposition and temperament, at what she would consider carelessness; but the storm didn't come; it was evidently a case of painless extraction without the use of an anæsthetic.

I saw instantly that there was an opportunity for an interesting ex-

periment; so I pressed a napkin firmly down over the alveolus; enjoined her not to remove it on any account; took the tooth, root and all, out to the laboratory; ground it off, and then came back and performed the first operation in my specialty of inserting *teeth with natural roots and artificial crowns.* I charged her a fee sufficiently large to insure her coming back *to me* in case of trouble. I saw her six months afterward, and beyond soreness and looseness for a few days, which I had anticipated and prescribed for, she had had no trouble.

DISLOCATION OF THE LOWER JAW.

BY A. J. REDERICK, SIOUX CITY, IOWA.

I MET with a somewhat singular case recently. A lady about forty years of age came to have a wisdom tooth extracted. On examination, the buccal surface was found decayed much below the margin of the gum, a fungous growth from which projected in and nearly filled the whole cavity. After lancing the gum freely, I grasped the tooth and extracted it quite easily. Laying the tooth aside, I found my patient's mouth wide open and the lower jaw fixed. Suspecting dislocation of the inferior maxilla, I was about taking steps for its reduction, when she grasped her chin with the thumb and forefinger, reducing it herself. I inquired when this first happened to her, and was informed that it was so ever since she could remember. At my request she threw out or disarticulated her jaw a number of times. On examination during the passage of the condyles from the glenoid cavity over the eminentia articularis, there was no great obstacle nor hitching against the malar bones by the coronoid processes, as is sometimes the case in dislocations of this kind. The appearance in front of the opening of the external ear showed great enlargement of the condyles, to perhaps three times the ordinary size. A tumor would be suspected; but this moving backward and forward with the jaw, and passing forward and downward during the dislocation, and both sides being alike, prove it a case of great enlargement of the condyles.

HOW TO TRUE A CORUNDUM WHEEL.

BY C. H. BENNETT, LIVERPOOL, N. Y.

IN making good joints, true wheels are indispensable. The method which I have adopted with entire satisfaction cannot fail to be of benefit to others. The wheel being adjusted to the spindle, a piece of sponge well saturated with alcohol should be placed in contact with it. Revolve the wheel very rapidly, holding a piece of corundum slab against the uneven surface. The friction will produce just heat enough to cause the alcohol to dissolve the gum shellac on the surface of the wheel, and in a few minutes it will become perfectly true, clean, and sharp.

INSERTING RUBBER DAM.

BY EDWARD J. KING, DECATUR, MICH.

Having traced several cases of absorption of the alveolus to injury done the dental and alveolo-dental periosteum by heroic wedging and ligatures in the application of rubber dam, I was induced to seek for some less difficult and severe method. About a year since, the plan I am about to describe suggested itself to my mind, and I have used it up to this time with increasing satisfaction to myself and patients. I can place it *in situ* in from one to three minutes, without the aid of an assistant. Make two perforations in the rubber about the usual size and distance apart, if the cavity to be filled is an approximal one; if on the crown, one only is needed. Prepare two soft silver or hickory pins (I prefer silver wire, flattened to the required thickness), of sufficient length to pass between the teeth and project three-sixteenths of an inch on each side. If the cavity is on the grinding surface, the pins are passed through the interstices, close to the gum of the tooth to be filled. The rubber is then drawn on to, say, the lingual point of one of the pins. Next draw it *over* the interstice and insert the labial point; treat the second pin in the same way, both pins and the tooth now being inclosed in the same perforation.

When the cavity is on the approximal surface, it is necessary to include two teeth, with two perforations, and a *wedge* placed below the cavity. The ends of the pins should be nicely rounded to prevent their cutting the rubber.

ADVANTAGEOUS METHOD OF PREPARING PLASTER MODELS FOR CASTING.

BY ALEXANDER BERHARD, D.D.S., NEW YORK CITY.

Hitherto considerable difficulty has been experienced in drawing the plaster mould from the sand; hence it has become a desideratum to simplify this process. Hawes' ring and Bailey's flask are unquestionable improvements, and praiseworthy in many respects; but it is submitted that an easier *modus operandi* is practicable, and my experience warrants me in suggesting to the profession the following method, which is within the reach of every dentist: The plaster mould being prepared in the usual manner for casting, I varnish the front (or the whole) with a thin solution of shellac. When this is perfectly dry, I mix some plaster of Paris with water and a small quantity of chloride of sodium; apply this to the front of the mould from the bottom up to the edge of the alveolar line, spreading it on both sides so as to entirely fill up the depression around, making the bottom half an inch thick, and sloping off toward the alveolar ridge. When this has hard-

ened, a slight tap will separate them; then draw the top of the *extra piece* over sandpaper, so as to obtain a flat edge, and let it dry. It is then ready for the casting flask. I now place the entire mould upon a flat surface, put the ring or flask upon it, and sift the sand over it, as fine as possible,—as the finer the sand the better will be the transfer. I pound the sand around it very firmly, then slightly tap the outside of the ring and raise it carefully from the mould, which by its own weight will withdraw itself; then replace *the extra front piece into the sand,* and all is now ready for casting.

This extra front piece is not impaired by use, and can therefore be applied repeatedly, if necessary, and the advantages and saving of time in obtaining a perfect model will be obvious.

WHAT WAS THE CAUSE?

BY GEO. F. TOWLE, LEWISTON, MAINE.

Having recently observed an unusual condition of the four first permanent molars, and being so unlike any previously met with, I am led to describe it and solicit an answer to the above inquiry.

A young lady, 22 years of age, called upon me for the treatment of some decayed teeth, and during the examination I found the crowns of all the first molars more than half imbedded in the gum. Both teeth and gums were in a sound, healthy state, and the bicuspids were more than usually well separated. Will some reader of the Dental Cosmos explain through its pages the cause of this uniform yet anomalous condition of these molars?

[The only explanation that can be offered in the above case is that the condition observed is due to an arrest of growth.—J. H. McQ.]

CHARCOAL IN DENTIFRICES.

BY DWIGHT M. CLAPP, GENEVA, SWITZERLAND.

In looking over a number of receipts for tooth-pastes and tooth-powders, recently published in a little memorandum for the convenience of dentists, I find that in some of them a large proportion of *charcoal* is used. Perhaps it will be interesting to the profession, at least to those who are not familiar with the fact, to know what *may* be the effect of the constant use of charcoal for cleaning the teeth. I will mention one case of the many that have lately come under my observation. A few weeks ago a Russian lady was presented to me for some dental operations. On examining the mouth, I found the gums, although apparently perfectly healthy, very dark-colored, and over each tooth, where they are a little prominent, and where the brush reaches the most readily,

a ring of very dark blue, almost black, resembling India-ink pricked into the flesh. Madame informed me that she had been in the habit of using *charcoal tooth-powder*. The result of it has been to very much disfigure her mouth,—so much so that in ordinary conversation one would not fail to notice it.

This is the worst case I have as yet seen; but those showing in a greater or less degree charcoal under the gums I have found very common. It seems to exist more among the Russians than other nations, as far as I have been able to observe.

PROCEEDINGS OF DENTAL SOCIETIES.

AMERICAN DENTAL ASSOCIATION.

[Continued from page 472.]

THIRD DAY.—*Morning Session.*

THE meeting was called to order at 10.05 A. M., August 4, by the President. After prayer, the minutes were read and approved.

Dr. Cushing, Chairman of the Committee on Operative Dentistry, read a very able report, which noticed the recent improvements in this branch, praising the rubber dam, and the generosity of Dr. Barnum, in giving the result of his invention to the profession,—reviewing the subject of adhesive gold, and the use of heavy foils, which it favored; finally calling the attention of the profession to some of the labor-saving machines for excavating, filling, and finishing.

Prof. Knapp then read two papers:—"The Saving of Time in Dental Operations," and "Cylinders—the Method of Making and Using them."

He recommended the operator to provide himself, for making cylinders, with a desk having a velvet top, a box divided into small compartments for holding different sizes of cylinders, an ivory paper-folder, a Swiss broach, upon which to roll the gold, the end being broken off and sharpened, and a pair of foil shears.

He had used many numbers of gold, from 2 to 30, but preferred Nos. 4, 5, and 6. When very large and long cylinders are needed, an entire sheet of No. 4 may be used; but for smaller, the sheet is cut into strips before folding.

To fold into strips or tapes, he first lays the piece of gold of the size required upon the velvet-covered top of an ordinary writing-desk, and then indents with the edge of the paper-folder, and folds gently. The tape is then placed on the inside of the forefinger of the left hand, the hand being turned with the palm up, and the end of the strip almost to the end of the finger. The broach is taken up by the right hand and laid upon this end of the tape, and the gold rolled upon it by closing

down the thumb of the left hand and drawing it backward toward the first joint of the forefinger. The rolling of the cylinder is completed by twisting the broach, thus once started, with the thumb and forefinger of the right hand. For very short cylinders, the tapes may be made by folding the sheet of gold and then cutting into very narrow strips with the foil shears. When the rolling of the cylinder has been completed, a few more turns may be given with the nail of the left thumb pressed against one end of the cylinder.

He claimed that the method described originated with Dr. John H. Clark, of New Orleans, and referred to the *American Journal of Dental Science*, vol. i. p. 23.

Some cylinders may be made larger at one end than the other, by folding the tape so that one of the sides is the thicker. For filling pulp canals, the breadth of the tape is made almost equal to the length of the canal, and one end is folded to within a short distance of the other; then the end which has been made by the doubling is carried nearly to the end first folded down. This doubling up of one end is continued until the length of the canal to be filled is obtained and the gold presents a series of slight steps, the first being the thickness of the tape, the second double, the third quadruple, the fourth eight times, and so on, duplicating. The broach is then put on at right angles to these folds, and the whole is rolled into a tapering horn with the smooth sheet of tape outside and the doubled steps inside.

The method of filling consists in closing up the crevices by small cylinders stood on end, and then arranging others parallel with these around the walls, so that the ends project out about one-third of the whole length of the cylinder. They are flattened and partly condensed against the walls by lateral pressure. Others are then placed around within these and similarly worked. The largest are rolled soft and used first, while the small hard ones are for finishing, keying all together in the small holes pierced by longitudinal pressure on the cylinders with wedge-pointed instruments. He spoke of the three-edged hatchets and hoes which he uses for excavating, and the wedge-pointed pluggers for filling with cylinders.

A paper by Prof. Frank Abbott, of New York City, "Light versus Heavy Gold Foil and Crystal Gold," was read.

Prof. Knapp. The paper just read advocates invariably the use of soft gold. The perfection of the filling, whether it be of hard or soft gold, depends most upon the manner in which it is introduced.

Dr. Peebles. Two facts are called to our attention by the reading of these papers. Prof. Knapp gives the credit of introducing cylinder fillings to Dr. Clark, in 1850. Dr. Spalding, of St. Louis, once claimed priority, and Dr. Ide, of Logan (now Columbus), Ohio, in 1839, had filled with cylinders, and recommended it to be done as cigars are put in a

tumbler. Dr. Parmly, of New York, when in Louisville, over forty years ago, had gold rolled, as he could not obtain foil, and used it for filling teeth. He wished these facts placed on record, since the use of the mallet was mentioned in Fitch's work on Dentistry, long before it was introduced as original by another.

Dr. Carroll criticised the use of the terms "cohesion" and "adhesion." He understood the former to mean the attraction of the particles of any substance for each other.

Dr. Morgan believed Dr. Clark had the honor of introducing cylinder fillings, but he had examined some made in 1832 of cylinders. Dr. Badger claimed to have shown Dr. Clark the first cylinder filling. A gentleman here (Nashville) had a filling inserted in this way at the age of sixteen, and is fifty-four years old now.

Prof. Knapp gave Dr. Badger the credit of using cylinders, but the doctor admitted that he did not make the entire plug of them; he forced them into plugs on finishing.

Dr. Morgan. I have seen Dr. Badger operate, but never saw him use a strip.

Dr. Fouché said his preceptor, Dr. G. P. Norman, of Cincinnati, used cylinders in his presence in 1837–8.

Dr. Dickerman. Dr. Flagg instructed me, in 1842, how to make and use cylinders.

Dr. Walker. The same idea so often occurs to active minds that it makes but little difference who made the first cylinder. He found that he must have instruments with points to go over and over again every part of the cavity. Where a cavity is irregular, he tries to make it simple. On the approximal surfaces of bicuspids he can get the best fillings with cylinders, but where there are irregular walls he uses soft foil or adhesive gold and mallets.

Dr. McKellops. The point to gain is that Dr. Clark was the first to put before the profession a description of how to make and use cylinders for filling teeth.

Prof. Bogue said: Under the head of Operative Dentistry we may consider some points—how our operations may be made neater by keeping our fingers and nails clean, by avoiding the use of them in our hair, etc.; napkins should be kept in order, instruments clean and polished. He said Dr. Carroll had criticised the word "cohesion," meaning sticking "with,"—"adhesion," sticking "to" any substance. Criticising the nomenclature of the profession, he thought we should drop "eye tooth" for "cuspid," which is better. "Tartar" is an incorrect term when applied to "salivary calculus." We often hear "destroying nerve," "taking nerve out," etc. spoken of, meaning "taking out *pulp*." It is not to be doubted that cylinders will make a most perfect filling in many cases, and the microscope will demonstrate that. There

are, however, some cases where crystal foil or gold is needed. *Teeth must be filled with judgment as well as gold.* He would no more abandon cylinder fillings than rubber dam. We must use all kinds, as the case requires.

Dr. Carroll thanked Prof. Bogue for the opportunity with regard to the criticisms of nomenclature. He differed on the Latin prefixes "co" and "ad." "Co" he defines "with." "*Ad*" means "to." Now, soft foil is always cohesive, but is not adhesive.

Dr. Allport. I hold in one hand a letter with a stamp adhering to it; in my other hand is a fan,—the particles of the handle cohere.

Dr. Dennis. Adhesion is a union of unlike substances; cohesion the union of like substances.

Dr. Dean. Cohesive attraction holds together like particles of matter, or atoms of the same kind. Adhesive attraction exists between unlike atoms or particles when in contact with each other.

Dr. Mills eulogized the paper of Dr. Cushing, of Chicago. It was an important matter that we should pursue our practice without prejudice, and simply for truth. We should spend more time, and examine closer into the preparation of the cavity for filling. He would as soon think of abandoning the rubber dam as to attempt to fill with cylinders, but has been much pleased with the views advanced. A remark was made by Prof. Knapp that he wanted to fill a difficult cavity, not a simple one. He thought much could be learned from simple cavities. The principles underlying filling must be studied, and difficult cavities reduced to simple ones. With reference to the number of instruments. He has been trying to reduce as much as possible. He has used many to learn, and he thinks here is another governing principle. He has come down to a few, which he finds valuable. Varney has presented thirteen; he takes out about four and gets along just as well as he did with all. His nervous temperament makes him try many. He agrees with Dr. Knapp as to the form of cavities,—the walls almost perpendicular.

The Recording Secretary read an invitation to visit the Tennessee Hospital for the Insane.

The invitation was accepted, with the thanks of the Society.

Dr. Crouse moved for an evening or night session, to hold the election for officers and to determine the next place of meeting. Carried.

Third Day.—*Afternoon Session.*

Committee of Arrangements reported list of new members and names of the members for the different committees.

Dr. Corydon Palmer took the floor, and stated that his subject was in continuation of that treated of last year. He desired to show how everything pertaining to the mouth may be made of use in practice.

Every fissure in a tooth filled should be marked and the charge made immediately after the patient has been under the hands of the operator; they are both better able to judge of the amount of force expended, etc. He divided the mouth into four divisions.

First, he exhibited a drawing of a head divided into four by a perpendicular and transverse line; this gave an upper and lower right and left division. In making a record it is well to know how to note this,—L. Sup., L. Inf., R. Sup., R. Inf. divisions.

Second drawing gave the teeth, thirty-two in number. Commencing at central incisor, he numbers backward to eight; in this way he has the teeth of the four divisions described by numbers; thus, the lateral incisor is No. 2, cuspid, 3, and so on to wisdom tooth, No. 8. The teeth thus become better known by their numbers than by their names. By the shape of the mark made he knows the kind of filling, and the position on the tooth by its relative position on the number designating the tooth.

Almost every dentist has some sort of short-hand or way of abbreviating a description of the operation. The time to make these marks or memoranda is immediately after completing the operation. Demonstrations then followed. He said that he was sorry to see so much time wasted in making pellets, cylinders, etc. They are filled with animal matter from the hands; while pressing and squeezing them in, spring the cavity in the tooth, and cause a constant antagonism between the attempt of the filling to escape and the tooth to retain it. Since 1860 it has been demonstrated by our prophet that a tooth can be built up, with all its cusps and fissures; yet there are some who will yet crowd gold into a cavity. No first-class operations can be made if the gold is handled with the fingers. In using soft foil, it don't make so much difference how you fill, so long as you can put it off; but in ten years or so take it out and it is offensive, and the animal matter in it will burn.

You need not fear cutting down crown surfaces or fissures, for with adhesive gold this may all be replaced. Make the cavity thoroughly open, and put a mat upon the bottom; then build up, packing toward the walls. This is first-class, and anything short of it is short of the highest attainment in our science. It has been stated here to-day that the cylinders make the most perfect and solid fillings. It is not true,—they will not do. Begin and build up solid from the bottom. Do not object to the heavy foils, but with No. 4, if you have proper instruments and operate correctly, you will obtain good results.

You must understand how to have your instruments right, and encourage our manufacturers. What is one or two dollars for an instrument? The difference of a line will make an instrument unfit for use. Just pay them to put the talent in it; have the serrations fine. It is

most essential to have a fine point. Don't put the instrument on with a nervous force or jerk, but steadily, and press it down, holding it tight; then with the lead mallet strike a following blow, and let it not spring off; this vibration is what hurts the tooth. You strike with a steel mallet, or wood, or bone, etc., and bounce it off, but with the lead you hold the instrument until after the blow dies away.

In a recent case of atrophy with ridges and pits, I used the rubber dam and immediate wedging; had an 8-oz. mallet and very light instrument. The instrument should be in length in proportion to its size, and all according to what you may wish to do. With regard to mallets, I have a band of iron made, united with hard solder, and run the lead into it for a head. The making of the gold foil is confined to the manufacturer. We know there is a difference between adhesive and soft foil. I want that with a beautiful, bright, metallic surface. One-third of the value of gold is destroyed by pressing it in a screw-press, leaving the mark of the paper upon it. To use it I cut the foil, let it fall upon a napkin and roll it up with that. This roll is cut in pieces or attached at one end, and then built around. For annealing, the tube of the lamp should be made of platina or glass, so as to have a flame free from oxides. Be careful of the match, as the phosphorus may injure the gold.

I will describe how I filled a left superior lateral incisor, where one-fourth of the labial wall was cut away to get at the cavity. Get a perfectly smooth and straight labial wall; do not bevel it at all. This is done to have it strong. It may be started with a small chisel,—let it be strong and sharp. Then use a file to prepare the edges; get margin or edges all right; proceed until the cavity is fully prepared; with a fine drill, make a small retaining-point, or make little grooves. It is astonishing how much little pits will help to retain the gold. The rubber dam is indispensable; you will come short of making a first-class operation if you do not use it. Put little hooks in the corners of the rubber, and attach to strings carried over the ears, to hold the dam up out of the way. He said that he divided the finishing of a filling into six stages:—first, filing; second, scraping; third, stoning; fourth, polishing with fine pumice; fifth, polishing with fine chalk; sixth, burnishing. He cautioned all to be sure and wash off the filling well with soapsuds before burnishing.

Third Day.—*Evening Session.*

After much discussion, Atlanta, Ga., was chosen, upon the third ballot, for the next place of meeting; and the association then went into the election of officers, with the following result:

President.—Dr. W. H. Morgan, Nashville, Tenn.

First Vice-President.—Dr. S. W. Dennis, San Francisco, Cal.

Second Vice-President.—Dr. J. R. Walker, New Orleans, La.

Corresponding Secretary.—Prof. I. A. Salmon, Boston, Mass.

Recording Secretary.—Dr. M. S. Dean, Chicago, Ill.

Treasurer.—Dr. W. H. Goddard, Louisville, Ky.

Executive Committee. For three years.—Dr. G. H. Cushing, Chicago, Ill.; Prof. J. S. Knapp, New Orleans, La.; Prof. J. Taft, Cincinnati, O. *For two years.*—Dr. W. W. Allport, Chicago, Ill.; Prof. E. A. Bogue, New York, N. Y.; Dr. I. Forbes, St Louis, Mo. *For one year.*—Dr. S. J. Cobb, Nashville, Tenn.; Dr. A. C. Ford, Atlanta, Ga.; Dr. J. P. H. Brown, Augusta, Ga.

Committee on Publications.—Drs. M. S. Dean, W. W. Allport and G. H. Cushing.

Committee on Dental Physiology.—Profs. Homer Judd, Thos. C. Stellwagen, and Dr. L. Augspath.

Committee on Dental Chemistry.—Prof. T. L. Buckingham, Drs. C. C. Carroll and J. G. Willis.

Committee on Pathology and Surgery.—Prof. W. H. Atkinson, Drs. J. R. Walker and W. H. Morgan.

Committee on Operative Dentistry.—Prof. J. S. Knapp, Drs. H. J. B. McKellops and P. G. C. Hunt.

Committee on Mechanical Dentistry.—Drs. John Allen, W. H. Eames, S. B. Palmer, C. M. Wright, and B. B. Alford.

Committee on Dental Education.—Drs. G. A. Mills, S. J. Cobb, and, Prof. L. D. Shepard.

Committee on Dental Literature.—Drs. G. H. Cushing, R. N. Lawrence, and J. N. Crouse.

Committee on Voluntary Essays.—Drs. S. H. Beard and C. D. Cook.

Committee on Dental Histology.—Dr. W. W. Allport and Prof. J. H. McQuillen.

Committee on Dental Therapeutics.—Dr. H. S. Chase, Prof. E. A. Bogue, Drs. Thos. T. Moore and C. P. Baird.

Committee on Dental Instruments and Appliances.—Dr. J. B. Morrison, Prof. I. A. Salmon, Drs. S. W. Dennis and Corydon Palmer.

Committee on Prize Essays.—Drs. I. Forbes, J. P. H. Brown, W. C. Dyer, A. C. Ford, and J. W. Moffitt.

Committee on Dental Ætiology.—Profs. J. Taft, S. P. Cutler, Drs. R. W. Varney and W. O. Kulp.

FOURTH DAY.—*Morning Session.*

Called to order at 10 A.M.

The session was opened with prayer. Minutes read and adopted.

An amendment to the Constitution, offered by Prof. Buckingham, last year, was then read. It provided that

"No person shall be a member of this association who holds a dental patent, or is or shall be interested in one."

After considerable debate, it was lost.

Dr. Dennis called for Dr. Mills to continue his remarks.

Dr. Mills thinks the best excavators are the three-edged; he received from Dr. Brockway, of Brooklyn, N. Y., an instrument that is a sort of scoop; this is very generally useful; it does away with burs. His manner of filling teeth is now to wedge immediately. A short time ago he went back to separating by rubber. The main stepping-stone to success is the preparation of the cavity. He uses two excavators, a scoop and a file, to finish edges. Like Dr. Palmer, he wants perpendicular walls. He has used many kinds of gold, but now prefers adhesive. He sometimes uses Morgan's plastic gold, in the bottom of the cavity, to facilitate and hasten operations. He uses foil, mostly Nos. 8, 10, 15, 40, 60, and 120, preferring Nos. 15, 40, and 120. He makes slots for retaining-points, and commences with heavy numbers, as they retain better and stronger. The heavy foils, he thinks, produce a better class of work, but require more care in packing. He thinks that if fillings were hollow, but the walls well adjusted, they would be better. The packing of gold around the surfaces and margins of the cavity, he thinks well of. Sometimes, in turning over the heavy foil, or folding, it makes a corner, and some object to it. He practices burnishing or beating the edges of the tooth and the filling, bending all down solidly. When he says "beat," he does not mean a heavy or brutal hand,—it can be done with heavy pressure. In using the mallet, it should give the blow in the direction of the axis of the tooth. He has had cases where the mallet could not be used.

Prof. Knapp is no advocate of any extensive use of cements, but believes they may do well in some cases. He would not call attention to anything but a wash for cements; it is the *Liquor Sodæ Chlorinatæ.* It is a deodorizer and alkaline, quickly removing all odor or smell from the hands. It gets rid of the oxide from cements. Equal parts of water with Labarraque's solution first, and finally washing repeatedly with alcohol, cleans the amalgam very perfectly.

Dr. Dickerman, in bleaching teeth, removes all of the carious portion of the tooth, and dresses with camphorated spirits for two or three weeks. If it is advisable, lines the cavity with oxychloride of zinc. A tooth is not dead so long as it has any attachment, and it may be restored to usefulness even when this is very slight. Abscesses that have been discharging from one to twenty-seven years have healed. We then find cartilage formed. With regard to gold, he had seen teeth filled with from No. 2 to 640, or No. 20 doubled 32 times. Good fillings may be made with all numbers.

Dr. Mills. Gentlemen seem to have lost sight of principle when they talk of leaving a vacuum. There can be no vacuum in nature. He does not approve of sponge gold shingled over. With relation to cement,

there may be circumstances where it may be of use, but it must be with caution. Many may jump at it, as they have not been able to fill with gold. He has in his own mouth the eleventh filling of a student, which is as good as anybody could desire. All, or most all, can, by proper education, soon learn. He thought it would be well to select a few of the best operators and pay them to go over the United States and teach dentists how to operate. Talk of teaching the people,—let us teach ourselves until we are able to know what we are about. Why is the medical profession not willing to acknowledge us? It is because we are not educated.

Dr. Forbes. With regard to the number of instruments, as we advance, very few are used. The dental manufacturers, selling so many, reminds him of a teacher selling his instruments to his student, when he knows that the poorer the operator the more he needs good instruments. It is an axiom, that a man does not know a thing if he cannot communicate it to others. One operator says we can learn more by witnessing a single operation than hearing it spoken of for years. He was once taught here that napkins were not necessary, and that *débris* can be blown out of a cavity! He thought a tooth could be better built up by cylinders than any other kind of pellets. In filling a tooth, Dr. Palmer made a slot and put a piece in it, holding it in position until condensed. He then built down, claiming that, in twenty years after, if taken out, it would be pure and clean beneath! Now, if the heat beneath is 95°, what if the patient eats ice? It will reduce it to 35° or 40°, and must contract.

We have just heard that Prof. Abbott's experiments are of no consequence!

If a cylinder were placed at the side of a cavity and condensed there, the filling may be thus one-half completed, and the cavity is gradually reduced as more and more are added. Cannot the small cavity left be filled as well as a large one? A cylinder filling will remain perfect as long as a keystone in an arch!

The paper by Prof. Knapp reads as if all should be made by cylinders with hand-pressure. If the mallet is used, it would be found to be a labor-saving machine.

He never touches his fingers to the flesh, but always lays a napkin in the mouth. Operators are telling us that by heavy foil they can put in more gold. He would like the experiment tried with cylinders.

With regard to operations in St. Louis, they have a book like a bill-book, with two diagrams of the mouth on each page, so that one can be torn off and sent to the patient. Then, by abbreviations by letters, they make the charges quite as well as by complicated, arbitrary signs.

Dr. Walker has met with success with biborate of soda for washing amalgams. He presented, as an alloy for casting metal plates, in place of vulcanite—

Bismuth, 1 part;
Pure tin, 15 to 20 parts.

To make sharp castings, there is nothing that he knows of better.

Prof. Atkinson. The only way to learn is by close attention and presence at operations. He would prefer to have the filling hollow, if solidly adapted to the walls. With few instruments, under the inspiration of necessity, we can make excellent operations. We should not talk of contraction of gold from cold, and forget the tooth-substance. There is no appreciable change of the two, or, if any, it is not of importance.

How many are here who never saw their preceptors put a filling in a tooth in the mouth! Do not operate for any one who will not permit a third party to be present. Let the students excavate teeth in the laboratory, and finally go to the office and do *as some of my students have done,—never make a failure.*

It is damnable for a man to willfully destroy a pulp at any time. If any vitality is left, there is hope of saving the organ. Twenty years ago I came to that conclusion. November 4, 1857, I dedicated myself to save each, all, and every part that it was possible to do.

Prof. Stellwagen exhibited two pairs of excising root forceps made according to patterns described by him in the DENTAL COSMOS for September, 1869. He wished that the members would suggest any improvements they might think of. He considered that, when roots are broken off below the alveolus, these are invaluable instruments, as they insure the extraction of the remaining portion with but little crushing or grinding of the surrounding tissues, making clean cuts through, instead of tearing out the sockets with the roots.

He also called the attention of the members to a pair of metallic boxes like impression-cups without handles, in which softened gutta-percha could be placed, and the whole pressed upon the teeth to hold them in position in case of fracture. By means of holes through the plates, he secured the washing of the mouth with jets of water, and, through an opening in the front, fed his patient, and also kept the mesian line of the mouth in sight. These splints could be thus used for different cases, and admitted of being quickly adjusted. They were modifications of Dr. Allport's and Dr. Gunning's splints, differing from the latter in having the plates wired instead of soldered together, thus admitting of perfect adjustment of the two maxillæ without removing the splints. Changes, if desired, could be effected by drawing some of the wires tighter and loosening others. A few sets of these would prepare one for almost any case of fracture, and he thought, instead of plates, mere rims united by transverse bands would do better. The pair exhibited had been used by him in a case of fracture of the inferior maxilla, and a perfect occlusion of the teeth was obtained in a short

time, where it had seemed at first to be very nearly impossible to hold the fractured ends in position.

Dr. Walker urged the importance of endeavoring to instruct a patient to keep fillings upon the approximal surfaces of the teeth clean.

Dr. Palmer. A cement in hardening will shrink a little; it is said of amalgam that it will enlarge a little. The difference between a filling which hardens after putting in and a metal one that is hardened by pressure is very great. He don't advocate amalgams, only as experimental. Pure gold and pure tin are the very best materials used. If the gold don't come in contact with the cavity, a change takes place. Emery-paper is too harsh for use in polishing.

The report of the Committee on Mechanical Dentistry was read by Dr. S. B. Palmer, Chairman. It called for a substitute for vulcanite.

Dr. Allport took exceptions to *cheap* dentistry.

Report of Committee on Dental Education, by Dr. M. S. Dean, read and accepted.

Dr. Cobb, of the same committee, read a paper recommending a dental journal to be published with the proceeds of a fund established for the purpose from the treasury of this society.

Dr. Allen could not help comparing the condition of the dental profession with what it was when he studied. We have made many advances,—colleges, societies, journals, works, etc. While all this is advancement, we still want more, and it is the increased light that brings us to wish for greater perfection. The most of the artificial work made to-day will not compare with what it was twenty years ago. He feared we were neglecting this and attending only to operative dentistry. He gloried in the improvements in operative dentistry, but he regretted to see the association ready to pass over mechanical dentistry.

Prof. Taft. Dental education should interest all. Shall those who come after us be equal to or superior to us? We should prepare them to meet the exigencies of an age when one revolution is rapidly following in the footsteps of another. There are other features. Are all the men now in the profession prepared for it? As we are laboring to raise them, let us consider if there is nothing more to be done than there is now. We have our periodicals and our associations: these reach but few. Of the eighty associations, perhaps one thousand would count all the members that are in them. Can nothing be proposed by which to reach the balance of the profession? This association had once attempted, by appointing a committee, to aid in organizing local societies; through it many were formed. This committee has died out. It should not be so; there is yet a large field for the work. Another idea is to appoint definitely a committee to go out among the profession, and gather them in classes to teach them and to stimulate them to learn

more, making normal classes, supported by this association or other means. Many have already offered to assist in such an undertaking. This would habituate dentists to meet together, and they would soon support the classes themselves. His great desire is that the most should be done to elevate the profession that our resources will admit of.

Dr. S. B. Palmer agrees with those who would improve our science and disseminate a general knowledge of it. He has given the matter much attention, and among the means offered there might be found some objectionable feature. He proposed the printing of a circular or card, enjoining the importance of cleaning the teeth, which may be free from advertisements, and obtainable from this association at a moderate cost by members for distribution among their patients.

Dr. Crouse. Let us make better practitioners of ourselves, so as to show the people the greatest difference between the true and false dentist. He had suffered from his office and college instruction. If it had not been for dental societies he would, no doubt, have been plodding along yet. A deficiency of colleges is that they have not enough clinical demonstrators, making the clinics or the infirmaries the great thing. Men who are run away with by their hobbies are not fit to teach! In dental societies he first discovered his deficiencies, and this had stimulated him to improve himself.

Prof. I. A. Salmon moved to read all reports first, and afterward to have the discussion in regular order. Carried.

Dr. M. S. Dean, Chairman of the Committee on Publication, reported that four hundred and twenty copies of the proceedings had been printed, at an expense of $380, and the price to those not members was fixed at $1.25 each. Two hundred and fifty copies of the new constitution had also been printed.

Dr. T. T. Moore offered, as an amendment to the constitution, that no one shall hereafter become a member who has a dental patent, or is interested in one. Laid over, according to law, for the next annual meeting.

Dr. Forbes offered the following:

Resolved, That the members are requested to bring with them to the next annual meeting such pluggers and excavators as they have in general use, so that when presented to the Committee on Instruments the committee may be enabled to make up a *complete set*, containing no more instruments than are necessary.

Dr. Shadoan spoke of the dissatisfaction at the place of meeting chosen. He moved to reconsider the question, which resulted in the selection of Niagara.

FOURTH DAY.—*Afternoon Session.*

Called to order.

Dr. Goddard offered, as an amendment to the constitution, that the meetings be held annually at such *time* and place as may be designated. Laid over for the next meeting.

The minutes were then read.

Greenbrier, White Sulphur Springs, Virginia, was then chosen as the place of next meeting, as a compromise between Niagara, Atlanta, and San Francisco. The announcement of the result was received with great satisfaction, and a question which had disturbed the harmony of feeling was thus ended.

Committee on Dental Ethics, Dr. Morgan, Chairman, reported with regard to the case of Dr. J. A. McClelland, finding him guilty on his own admission, but with mitigating circumstances, and moved that he be allowed five minutes to be heard. The subject was then, on motion of Dr. Cushing, postponed until Dr. McClelland should be present.

Dr. Kulp moved that a committee of three be appointed, who shall prepare a circular upon popular education, and furnish the profession copies for distribution, at a rate sufficient to cover expenses of publication. Adopted.

Drs. Kulp, Walker, and Peebles were appointed.

Dr. McClelland, of Louisville, then came in and made an explanation.

Prof. Atkinson moved that it be deemed satisfactory. Carried.

The customary ceremonies and speeches incident to installing the new officers were then gone through.

Dr. Cushing received permission to read a letter from Dr. J. W. Clowes, with regard to the rubber dam.

The writer stated that on the 13th of May, 1864, he was informed by Dr. S. C. Barnum of the discovery of this means of keeping teeth dry to facilitate the dressing or filling of the same. He then proceeded to describe how Dr. Barnum had caused the discovery to be presented to the profession, and how, when brought to the notice of practitioners in various places, it was first declared impossible to apply it successfully, then ridiculed, afterward objected to, and finally very generally adopted.

The Corresponding Secretary was then directed to forward a resolution offered by Dr. Dickerman, in which the American Dental Association formally acknowledged the discovery, and the admiration of the spirit which prompted Dr. Barnum to make such an important invention a free offering to his fellows.

Dr. Goddard wished the coffers of the Association could be well filled, so as to be able to make some appropriation for such cases as this. He would be happy if they had many thousands of dollars,—one of which he would like to see appropriated to the purchase of a suit-

able microscopical apparatus, so that Prof. McQuillen, or some such person, might give lectures and demonstrations.

The Corresponding Secretary was then directed to forward a resolution of this association acknowledging the gift.

Dr. McKellops. There was a motion here to-day about patents. Here was a young man, Dr. Barnum, poor and struggling,—now what encouragement has he for his present to the profession, which would have been a fortune to him, if he had chosen selfishly to patent it?

Dr. Allport was in favor of more than the mere motion. He would favor the taxing or voluntary contribution to raise a gold medal from the association.

Dr. Dickerman moved that the members of this association be assessed to the amount of $1000.

Dr. Chisholm suggested that it be by *pro rata.*

Dr. Dennis would like to see it voluntary.

Dr. Crouse would prefer to see this done without compulsion.

Dr. Forbes moved that, in consideration of the great merits of his gift, this association contribute the sum of $1000 to Dr. Barnum.

Dr. Cobb opposed a precedent of this kind.

A member thought this just the thing we did want as a precedent.

Dr. Forbes' $1000 motion was then carried.

Drs. McKellops and Arthur were appointed a committee to get up a gold medal, at their own expense, for presentation by the association to Dr. Barnum.

Prof. Atkinson moved that the Publication Committee be authorized to make the best arrangements with the dental journals for the publication of the transactions of this body. Carried.

Dr. Shadoan moved that a delegate be appointed to the Southern Dental Association. Carried.

Dr. J. A. McClelland resigned.

"Operative Dentistry" was then taken up.

Prof. Atkinson. How would I bleach teeth? If iron discolors, cut all away but as small a portion as possible for strength; fill full of oxalic acid crystals; put a drop of water in the cavity, and mash the crystals in it. There are other agents,—salts of copper, etc.,—if we sufficiently understand chemistry, that would be available to bleach. We can use chlorine gas through a small glass pipette; must be carefully used, as it might cause œdema of glottis. Here the rubber dam is valuable. Chloride of lime, Labarraque's solution, etc., are all good.

You must not hope too much in bleaching teeth. The great majority will bleach if left to the open air. Fill with wax for a short time, and, on taking it out, wash with salt water. Pure oxide of zinc with chloride of zinc is good to put in as a creamy mortar, filling the tooth full, twirling a piece of cotton in it; then cut out all but a small, thin stratum, to see the color. Don't get the teeth too white.

I generate chlorine gas by black oxide of manganese and hydrochloric acid. This works very rapidly.

The agents supposed to color the teeth may be iron from hematin, as the mineral, or they may be of vegetable origin; if the latter, these colors are bleached by chlorine.

My process for saving nerves, or portions of them, is to cut away all diseased parts of the tooth possible without giving too great pain, and then to sop with creasote every day—better twice a day. Often a little pus will come away. I have found the bulb come away, and leaving the pulps alive and red in the roots. In one case I have taken out the pulp of all but one buccal root. When recently exposed I treat at once; but, if not, I treat several days, and then I claim that I am no worse off than at first if I should find the pulps dead. Never put arsenic in a human being's mouth. Then put oxychloride of zinc, of creamlike consistency—introduce on cotton, trimming off and filling with gold; or fill temporarily or preparatively with oxychloride of zinc.

I make this distinction between creasote and carbolic acid. The latter is crystallizable acid from coal; creasote is a combination of two acids—cresylic acid and carbolic acid. Pure Scotch or German creasote from beech wood I prefer, but don't know why; the perception has not got into me yet.

Every diseased action is below the standard of life, none above. I use creasote to make a carbolate and cressalate of albumen, to make a protection like a scab. This I call calciferous matter, or it may be secondary dentine substance. I have seen only a little or crescent-shaped particle form upon one side of the exposed portion of pulp, and sometimes have seen all filled up. I always leave a little creasote in every cavity, and do not wipe it out too dry. I once put in the capping without pain, on the pulp, and there was none for some time after, but the patient returned, suffering, and I opened and found an empty pulp-chamber. This is better than destroying nerves any other way. Creasote cannot destroy beyond a certain point, unless the pulp is unhealthy, for the saturated condition of the pulp will not take up more than to make this pellicle, which protects the balance.

Alveolar abscess will not occur, unless the liver or the pancreas is out of order. Lower the circulation, give an emetic, and follow up with a cathartic. To the point or seat of pain in the gum apply hot or cold water; no lukewarm. Hot is above 112°,—say 150° or 160°. Apply hot or cold, whichever comforts the patient. You may begin with hot flannels (wrung out in hot water), using hotter and hotter, until you come to the extreme heat. White corpuscles are young corpuscles; if they die, they become pus corpuscles.

Aconite stops neural circulation; so does heat. They drive back the circulation by contracting the capillaries. If pus corpuscles have formed, cut and let out these devils—*exorcise* them.

If abscess has opened, go through the root and enlarge it until blood comes through. Wash with water and tincture of calendula. Thus I get rid of all foreign substances, go through the alveolus, and amputate the end of the root, if it is necrosed; fill with gold by making a shoulder inside of the pulp canal, and to this point in each root press the gold, filling it completely. Then open the fistula large enough to see the apex of the root, and cut or polish off, as you please. Inject sulphuric acid and water, taking care not to let it run over the mouth; then fill the opening with tannin and glycerin. Chloride of zinc may be used, 480 grs. to the oz. of distilled water. All fibrils found in teeth are post-mortem results. Tomes does not call them nerves.

A resolution authorizing committees to put on sale, at any depot, the printed copies of proceedings, was then carried, the price of the large books being fixed at $1.50, and the small at $1.00.

Adjourned.

SAN FRANCISCO DENTAL ASSOCIATION.

At the annual meeting of the San Francisco Dental Association, held Saturday evening, September 3d, 1870, the following officers were elected to serve the ensuing year:

President.—Dr. Henry Austin.
Vice-President.—Dr. Wm. J. Younger.
Corresponding Secretary.—Dr. Henry E. Knox.
Recording Secretary.—Dr. A. B. Wood.
Treasurer.—Dr. F. A. Park, re-elected.

The retiring president, Dr. C. C. Knowles, made some very pertinent remarks, after which he introduced Dr. Austin as president for the ensuing year.

The association has now commenced the second year of its existence, and we trust that its influence for good will increase more and more, as we feel confident it will, judging from the good it has accomplished during the past year. Our motto is "Excelsior." H.

NEW YORK DENTAL SOCIETIES—SEVENTH AND EIGHTH DISTRICTS.

The second annual union meeting of the Dental Societies of the Seventh and Eighth Districts of the State of New York will convene on Tuesday, October 25, 1870, at ten o'clock A. M., in the city of Rochester, and continue its sessions through the succeeding day. It is expected that this will be one of the largest and most profitable gatherings of dentists ever held in Western New York. An invitation is extended to all dentists to be present and participate in the meeting.

S. A. Freeman, *Secretary Eighth District.*

CLINICAL REPORTS.

CLINIC OF DR. J. E. GARRETSON, UNIVERSITY OF PENNSYLVANIA.

REPORTED BY DE F. WILLARD, M.D.

RANULA.

THE patient now before you is suffering from the form of tumor known as ranula. As she opens her mouth you may see it directly beneath her tongue, to the right of the frænum. It has a flabby, relaxed appearance, resembling very much a teat of loose flesh.

A week ago, the patient informs us, this tumor was tense and glistening, and of such size as to prevent the closure of her jaws—indeed, protruding over her lower teeth. One evening, suddenly, a ropy, yellowish fluid ran from her mouth, and in a few minutes the tumor became as you now see it.

Let us fully understand the subject before proceeding to the operation. A ranula is the analogue of the common sebaceous tumor. Some one of the tubal outlets of the salivary glands becomes obstructed; an accumulation of the secretion necessarily occurs, which continuous accumulation is accommodated by the bulging and attenuation of the tube, thus giving in the end a tumor of greater or lesser size.

Now, whether this tumor is to be large or small; whether it is to look and feel like the belly of a frog, or to be so solid as to seem almost stonelike, depends entirely upon circumstances. Should the obstruction be complete and sudden, and the secretion of the gland profuse, the tumor will have a very thin wall, translucent, which will indeed be almost like the belly of a frog.

On the contrary, when the obstruction is incomplete and inflammatory in character, then the enlargement of the growth will be gradual, while the sac will be indurated from the result of plastic deposits made in it; the contents will be gelatinous, and the tumor will look and feel like a fibrous growth.

It is not unlikely that a ranula of long standing, either complete or incomplete, will contain a salivary calculus.

These calculi are formed by the deposition of the salts of lime, as the fluid portion of the saliva is gradually absorbed, and the resulting stone is almost identical in character with tartar so often seen surrounding the neck of teeth.

These stones sometimes attain a considerable size, even as large as a pigeon's egg, as may be seen in a specimen in the Pathological Museum of the Philadelphia Hospital, which was removed by me from one of these sacs some years since.

In the case before us we have simply the collapsed sac of a "frog-belly ranula." The yellowish fluid alluded to by the patient as having

escaped was but the contents of the cyst; which cyst had been ruptured by some accidental cause. Such a rupture it might be supposed would result in a cure of the difficulty, but such an inference, unfortunately, can but seldom be justified by past results, the slit in the sac speedily reuniting, and thus again obliterating the outlet.

Various means have been adopted for the cure of cases like the present, which means we shall endeavor, during our clinical service, to present to you from time to time.

In the present instance the treatment will be confined to the simple introduction of a seton, which will be allowed to remain until it is thrown off by ulcerative action, or until sufficient evidence is given of a cure, which we have no doubt will occur.

[Several strands of ligature silk were then passed through the sac, by means of an ordinary curved needle, and looped.—De F. W.]

Cysto-Succulent Tumor of Jaw.

The case before us is one which a few moments back I saw for the first time. I have as yet no diagnosis of it, and we will study it together. *Imprimis*, we remark the size and position of the tumor. It is ill defined, but I can map it from the centre of the lower lip in front to the angle of the jaw behind; from the inferior boundary of the submaxillary triangle below to the line of the commissure of the lips above. To the touch it is doughy; to the eye the parts look healthy, except a line about the length and breadth of a phalanx, which, as is readily seen, has the appearance of a great varicose vein.

This tumor, the patient tells me, first made its appearance thirteen years ago; up to four years back she had frequent attacks of pain in it; at that time a surgeon passed an exploring needle, since which, she says, it has never hurt her. Her desire to have it removed depends entirely on the deformity existing.

We may stop just here for a single moment to consider a fact,—a key to the diagnosis of tumors. If the members of the class will recall their clinical experience, they will be struck with the basal truth that all tumors classify themselves under two general heads,—first, tumors which are analogous; second, tumors which are heterologous,—that is to say, the first class, from anatomical situation,—from contiguity to certain parts, designate themselves as what I might be allowed to term physiological derangements. The sebaceous, the fatty, and the adenoid tumors may serve as illustrations, or we may illustrate them by the hernial tumors, by the enlarged testicle of orchitis, by the protruding meninges in spina bifida. In all these cases, and in a dozen others, they are analogous. We are at once directed in our diagnosis, and almost without the possibility of erring.

The second class are without anatomical analogies. They are generally

local outgrowths, as it were, of constitutional conditions, and they are set down by their materies morbis anywhere. Such growths are commonly carcinomatous in character, or, if not strictly so, may certainly be viewed with more or less doubt. You will be on the safest side if you view and treat them with the latitude given cancer. The tumor before us belongs to the second class; it has no anatomical explanation,—that is to say, it has no anatomical data with which it accords. It is not an abscess, nor an adenoid tumor of the submaxillary triangle, because its upper border has no accord with such triangle. It is not an alveolar abscess, because, looking into the mouth, we find it without any dental association. It is not a sebaceous growth, for sebaceous tumors in this situation are loose and movable, while this one feels as if flattened against the bone, or rather, indeed, as if the face of the bone constituted part of it. To advance our diagnosis, I will now use the exploring needle. [On the withdrawal of the needle, and pressure being made over the tumor, a delicate stream of arterial-colored blood was ejected a distance of ten feet.—De F. W.]

I scarcely expected this blood; where does it come from? It is hardly probable that my needle could have entered the facial artery, and yet it is possible; we will wait a moment and determine. If the artery has been struck, it will of course continue to bleed, and the parts will engorge; if it has not been disturbed, the parts will remain as they now are. While waiting, however, I will reintroduce the needle from the inside of the mouth, and make further exploration. In turning the needle about the base of the tumor, I seem to be breaking a very loose cellular bone. The body of the growth seems to be a single cyst, —it is certainly minus any very resisting contents.

The tumor, you see, does not enlarge; I have not, therefore, struck any special vessel. The growth itself is vascular. We are getting now our diagnosis. The tumor is a cystic growth,—it is a blood tumor, not an aneurism, because it is not in any of the aneurismal positions; it belongs to the order "Telangosis," and is a disease of the capillary vessels.

When, however, I say the tumor is cystic, I do not commit mysel to the assertion that it will be found to have a distinct cyst; indeed, I rather doubt this,—such growths are very anomalous, and do not follow an exact rule. What I desire to be understood as saying is, that this growth will be found on dissection to be an analogue of the nævi,—that it is an erectile growth, very vascular, and yet, if cut well outside of the capillary disease, may yield no more than the ordinary hemorrhage. Our diagnosis, then, is, that we have in this tumor an erectile growth, and that it may or may not be distinctly isolated or encysted. Our prognosis is, that it is capable of an easy and safe removal, and that the patient will make a speedy and comfortable recovery.

As the heteroclitic character of the tumor is concerned, it shows one of the exceptions of the class to the cancerous alliance. There is nothing malignant about this growth; it is a heterochronia of the vascular system, not the manifestation of a cachexia.

[NOTE.—Professor Agnew entering the amphitheatre at this moment, Dr. Garretson had the advantage of his assistance in the operation, which was forthwith commenced by making a curvilinear incision running from the symphysis to the angle of the jaw, being, however, entirely upon the neck, with the purpose, as remarked, of concealing any scar which might result. Carefully passing through skin, the platysma myoides, and the superficial fascia, all being found very much thinned, the sac of the tumor was reached; from off this the flaps were dissected, but toward the bone the cyst grew more and more imperfect, while the face of the maxilla was converted into a cellular mass quite as loose as the cancellated tissue of the head of the tibia. The mass seemed supplied by a single vessel of importance, and was removed without the use of a single ligature, Dr. Garretson remarking that it was a case which allowed him to exhibit to the best advantage the virtues of alum-water, this being used on the sponge exclusively. After the removal of the mass, it was found so loose in structure that, squeezing out the blood, the parenchyma was reduced to the size of an ordinary hickory-nut. It was then remarked that the tumor was of that kind which might be described as cysto-succulent, a very rare condition particularly as found connected with the osseous structure.—DE F. W.]

ALVEOLAR ABSCESS.

I have now to bring to your notice two cases, both females, aged respectively 20 and 30 years, who present themselves suffering from alveolar abscess: a disease which is of sufficient consequence to demand our careful study. It is important that you should understand this subject, as it is the key to an appreciation of many oral conditions. Let us speak, then, a few moments, of such abscess. What is it? In simple language, it is a "gum-boil;" its shortest definition would be,—an escape of pus, through a sinus, from a diseased periodonteum.

It commences, perhaps, by an enlargement of the pulp from some cause,—a simple vascular excitement; swelling causes pressure upon the nerves running to that pulp, and consequent pain; the endentium becomes implicated, the inflammation travels out the dental foramen to the periodonteum, and we have a periodontitis.

The swelling of this membrane lifts the tooth from its socket, as you will readily understand, since it is the only direction in which expansion can take place, owing to the rigidity of the walls. Now, though the elevation be but the thousandth of an inch, yet this will be the first point struck by the opposing teeth, and occlusion of the jaws gives

agonizing pain. When a pulp merely is inflamed, there is no pain upon pressure; therefore, whenever you have a patient who complains of pain in a particular tooth, upon closure of the jaws, you may be sure that there is an inflammation of the alveolo-dental membrane of that tooth. Should this inflammation be uncombated, a degenerative thickening of the membrane takes place, and pus is ultimately formed, which pus must have vent, and takes its course either toward the nearest surface or in the direction in which least resistance is offered by the osseous structures, and during its passage the pain is of an excruciating character, almost diagnostic in itself. I have seen patients rendered almost insane, requiring straps to confine them, during such passage,—all to be relieved by the simple extraction of a tooth, or other evacuation of the pus. When this pus escapes from the bone, pain suddenly ceases, the soft parts in the neighborhood distend, break down, and exit is effected, thus forming a fully-developed Parulis connected with the root of a tooth.

Such is the common history of alveolar abscess, and with these facts before you, recognition will be easy. The history is that of any other inflammation, as of the liver, the eye, or any portion of the body, the only modification being in the character of the tissues implicated.

Alveolar abscess thus formed usually runs into a chronic condition, and may run a varied course, being one day apparently well and the next in full discharge, and thus continue for months or years. The cases before us are good examples for study. The first, M. C., aged 20, gives us the history of a periodontitis established some seven months since, the symptoms being much as I have described, save that when the pain suddenly ceased there was no discharge of pus, either externally or into the mouth. Since that time, however, she has suffered much pain in her right cheek, and now presents a tumor of considerable size in this region. It is hard, yielding but slightly to pressure, and then with crackling; and I feel confident in saying that this prominence is due to an enlargement of the antrum Highmorianum, occasioned by pus, especially as I find a carious molar tooth of the upper jaw, the palatine root of which, as you know, often pierces the floor of the antrum.

This, then, was the route taken by the pus; it entered the sinus, the irritation caused by its presence closed the opening into the middle nasal meatus, and now, being permanently shut up, and pus constantly forming, absorption or attenuation of the antral walls has occurred. The wall usually first to give way is, I think, the palatine; but it may be the anterior, as in this case, or the orbital, as in a case which I recall, where the eye was projected upon the cheek for four months, the whole deformity being relieved finally by the simple pulling of a tooth. In the case before us it might seem sufficient simply to puncture the ante-

rior wall and stuff the cavity with some stimulating material, as iodine; but I have found from experience that when this wall has been thus expanded it has become more like necrosed bone, and it is far better to remove all such unhealthy bone at once. I shall therefore cut through this wall, reaching it inside the mouth, just above the alveolar process, and remove all the diseased portion, and then endeavor to promote healthy granulations and complete a cure by stimulating injections. [Dr. G. then performed the operation as described. A quantity of very offensive pus followed the first incision; the bone being found much softened and attenuated, was removed with the forceps.—De F. W.]

The second case, R. B., presents an ulcer upon the cheek, with an unsightly scar, which is the remains of another ulcer, now healed; but this one does not and will not close. The history is as above given,—severe pain, followed by abscess, and upon looking into the mouth I find the wisdom tooth carious. I pass the probe into the sinus, and it passes down until it strikes the fang of this tooth. The case is plain,—it is alveolar abscess. Sometimes these abscesses open far down the neck, almost to the sternum, thus causing many errors in diagnosis; or they may open into the mouth or upon any portion of the face. I have seen cases where operations for necrosed bone had been repeatedly performed completely cured in one week after they were recognized as alveolar abscess. I also remember a case where an ulcerous opening had existed for two years, much to the alarm of friends, there being a cancerous taint in the family, and which had been under the care of fourteen different gentlemen; yet it was well in three days after the proper treatment for "gum-boil" was instituted. Another instructive case I also recall, which illustrates the care with which we should examine the teeth in these cases. The denture had been examined and pronounced perfectly sound, yet in a strongly-reflected light I discovered a slight *opacity*, not otherwise discernible, in one of her teeth. Further explorations, by gentle taps of a steel instrument, satisfied me that the pulp was dead, and extraction cured the case in a week, though it had baffled the skill of several surgeons for three years. The very slight opacity in the tooth so long dead was probably due to a peculiar density occluding the dentinal tubules, thus preventing absorption of the dead pulp. It should also be remembered that though there be no discernible dead teeth, yet diseased fangs may be concealed in the alveolar processes. In the case of the lady before us we find that this discharge has continued for some years, and that portions of bone have been taken from this ulcer; and now I can feel a small piece of exfoliated bone at the bottom of this sinus. This must be removed, since it continually acts as a source of irritation, and the quickest method would be to simply cut down upon it. I wish, however, to teach you how you may accomplish this removal with as little deformity to the patient as

possible, and shall therefore simply dilate the sinus by packing it with cotton, which, absorbing moisture, will enlarge this canal in a few days to such an extent that a delicate pair of forceps can easily be passed, and the bone removed without pain or any such scar as must result from an incision. [Cotton was then inserted and the patient directed to return in a few days, Dr. G. remarking that after the removal of the bone and tooth the treatment would consist in simply stuffing the sinus with cotton saturated with iodine, thus inviting healthy action in the part and compelling the cyst to heal by granulations.—De F. W.]

Such, then, is the treatment of these cases when fully developed; but let me point out the course of treatment to be pursued in the early stages of this disease, that all this pain and suffering may be avoided. In the stage of periodontitis, mustard to the back of the neck, hot pediluvia, leeches or scarification of the part; cold to the mouth, or strong local application of iodine, may abort the attack, and cause all the symptoms to subside, just as a commencing congestion of the lungs or an attack of conjunctivitis may be aborted by appropriate treatment. Should these and other antiphlogistic means prove unavailing, and alveolar abscess threaten, the tooth should be immediately removed, or else an incision made directly down to the apex of its root, and the outer plate of bone of the cavity in which the sac is being developed broken up thoroughly, after which the wound should be prevented from healing for a few days by an inserted tent. If you will thus early treat your patients, much suffering may be saved, and you yourselves will gain deserved congratulation.

The treatment, however, of a still more preliminary condition I should, perhaps, speak to you about. Examine always the immediate condition of the tooth affected; sometimes you will find a tooth loose, sore, and elongated, all the diagnostic signs of periodontitis being present; and yet in this tooth is no cavity of decay, no exposure of its pulp. Never hesitate in these cases to drill a hole into the pulp cavity. You will always find the pulp dead, and more than likely putrescent. The exit of such dead and decomposed matter will very frequently result in a cure without further attention.

An inflamed tooth is not to be fretted and worried; you must shield it from contact with its antagonizing tooth. To do this it is only necessary to soften in the flame of a spirit-lamp a piece of gutta-percha and mould it over some neighboring teeth. A little cold water hardens this quickly, and thus an accurately-fitting cap is made, which secures, of course, the meeting of the indication. Sometimes a fishbone, thrust down into the alveolus, is the occasion of a periodontitis; this is not to be forgotten, particularly if another cause for the trouble is not evident, and the patient has been eating fish.

A plugged tooth frequently gives occasion for an alveolar abscess

through the thermal changes resulting from the presence of the metal. Who of us but has experienced pain in the pulp or nerve of a freshly-filled tooth whenever hot or cold articles have been taken into the mouth? The continuance of such irritations is very apt to result in an inflammation of the pulp, and frequently in its death; the step which leads to periodontitis and abscess is generally a short one.

Unskilled dentists sometimes save their gold foil by filling the bottom of cavities with tin; a galvanic current, pulpitis, periodontitis, and abscess result. To epitomize the subject, let us say that alveolar abscess is the result of periodontitis; periodontitis is the result of pulpitis; and pulpitis is the result of an irritant, which irritant should in all cases first be searched for, and, if possible, removed.

EDITORIAL.

VOLUNTARY COMMUNICATIONS TO THE AMERICAN DENTAL ASSOCIATION.

At the recent meeting of this association, held at Nashville, the Committee on Voluntary Essays having reported favorably upon the reading of a paper forwarded to them, it was decided, after an animated discussion, that the paper could not be read, as the author was not a member of the organization. The action in this case is a singular departure from the usage of scientific societies, which are ever ready to receive meritorious voluntary communications from persons having no connection with them, and even of whom they know nothing. The French Institute, the Royal Society of Great Britain, the American Philosophical Society, and many other eminent societies which might be named, receive and publish essays from the most obscure persons who forward to them new and original communications. It was through organizations such as these that the important discoveries of Franklin were made known to the world at a time when he was an entire stranger to the societies which he addressed. This is merely referred to as an illustration of the action of scientific societies in such cases as the one under consideration.

The very fact of the American Dental Association appointing a committee on voluntary essays, makes a standing invitation for persons to forward such essays to them. To refuse to receive a communication that had been favorably reported upon by the committee whose duty it was to examine into its merits, was neither courteous to the author or the committee, nor creditable to the association. If it had been the intention of the association to only receive voluntary communications from members, that should have been made known to the profession generally, and thus spared any one the mortification of having an

essay, forwarded in good faith, refused a hearing. Such, however, was not the object of the founders, in the preparation and adoption of the constitution. The clause in that instrument relating to voluntary essays was introduced with the view of affording persons not connected with the association, or even the dental profession, an opportunity to send communications to the society.

While it is to be regretted that the association placed itself in a false position in adopting the course it did, there is much satisfaction in knowing that several liberal-minded members advocated the reading of the essay. J. H. McQ.

CANADA DENTAL SOCIETY OF ONTARIO AND U. S. DENTAL COLLEGES.

In the June number of the *Canada Journal of Dental Science*, Mr. C. S. Chittenden, one of the editors, makes the following judicious comments on the action of the Ontario Dental Society:

"A committee was appointed to draft such amendments to the act as they might think necessary, and to report before the final adjournment. That committee, in the report, very properly, we think, suggested the propriety of relaxing the present stringency of the law in regard to foreigners, and also the recognizing of the diplomas of the American colleges. The idea of such liberality was too much altogether for the weak nerves of some of those present, and of course it was thrown out. One of the arguments against recognizing the diplomas of the American colleges was that it would injure our own school. If our school is to be propped up by such means, it had better be done away with at once. Make our school equal to theirs, and we need have no fear of competition. It is natural that Canadian students should prefer Canadian institutions of learning, and they will remain here if they can get as good a dental education here as in the States. We are sorry to see such narrow-minded views prevail, but hope that before long a majority of our brethren will see the propriety of admitting all foreigners to our ranks, if they are as well qualified to practice as we are ourselves."

It is a singular spectacle, in this day of enlightenment and liberality, to find a body of men claiming to be scientific in character, demanding legislative action to prevent foreigners, and their own people who have obtained a professional education in another country, from practicing in their midst; for this is the position of the society. To make war against charlatans, for the protection of the community and the suppression of quackery, is commendable; but no justification can be found in efforts directed toward the exclusion of thoroughly educated men, because they happened to be born in a foreign land, or had sought that thorough education abroad which they could not obtain at home. In such a crusade as that no glory can be gained, and the sooner the society recedes from its false position the better will it be for its reputation as a scientific body. J. H. McQ.

BIBLIOGRAPHICAL.

Transactions of the Sixth Annual Session of the Illinois State Dental Society.

A copy of the Transactions of the sixth annual session of this society, which convened at Bloomington, Illinois, May 10, 1870, has been received from the secretary, Dr. C. Stoddard Smith. The essays, mainly of a practical character, are followed by animated discussions, characterized by good sense in being strictly confined to the subjects under consideration. This, the first volume published by the society, is highly creditable to the organization, and it is to be hoped that it may be succeeded by other volumes of equal value, in subsequent years. J. H. McQ.

SELECTIONS.

GOLD AND ITS GOINGS.

The estimated amount of gold in existence at the commencement of the Christian era was $427,000,000. At the discovery of America, in 1492, this amount had diminished to $57,000,000. In 1600 the amount had risen to $105,000,000; in 1700 to $351,000,000; in 1800 to $1,251,000,000. The Russian mines, extending over one-third of the surface of the globe on parallel fifty degrees north latitude, were discovered in 1819.

In 1842 the estimated amount of gold in existence was $2,000,000,000.

Next followed the discoveries in California, February 9, 1848, and in Australia, February 12, 1851, which added enormously to the gold production. In 1853 the amount in existence was computed at $3,000,000,000, and in 1860 it was $4,000,000,000.

From the commencement of the Christian era to the discovery of America, it was estimated that gold had been taken from the surface and mined to the amount of $3,800,000,000. From that date to the close of 1842, $2,800,000,000; to 1860, Russia adds $746,000,000, and California and Australia $2,000,000,000 more. The amount of gold at present in existence is estimated at $5,960,000,000. The quantity of gold and silver of all denominations, in all quarters of the globe, is set down by the best authorities at from £300,000,000 to £400,000,000, and the quantity of plate and ornaments at about $400,000,000.

In the reign of Darius gold was thirteen times more valuable, weight for weight, than silver. In the time of Plato it was twelve times as valuable. In that of Julius Cæsar gold was only nine times as valuable, owing, perhaps, to the enormous quantity of gold seized by him in his wars. It is a natural question to ask, what became of the gold and silver?

A paper read before the Polytechnic Association by Dr. Stephens, recently, is calculated to meet this inquiry. He says of our gold product full 15 per cent. is melted down for manufacture, 35 per cent. goes to Europe, 25 per cent. to Cuba, 15 per cent. to Brazil, 5 per cent. direct to Japan, China, and the Indies, leaving but 5 per cent. for circulation in this country. Of that which goes to Cuba, the West Indies, and Brazil, full 50 per cent. finds its way to Europe, where, after deducting a large percentage used in manufacturing, four-fifths of the remainder is exported to India. Here the transit of the precious metal is at an end. Here the supply, however vast, is absorbed, and never returns to the civilized world.—*Christian Mission.*

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

Physiology.—"Dr. Andrew Clark, in commencing the business of the physiological section of the British Medical Association, made some valuable remarks, of which we give an abstract. He proceeded to discourse on the nature of the science of physiology, and its relative value to other sciences in the medical profession. He said it was the business of medicine to consider health as well as disease, and this consideration involved the regulation of physical growth and development by means of food, exercise, air, and the like, in the first place; the regulation of mental growth and development by means of education, in its literal and highest sense, in the second place; and the conservation of health and energy, prevention of disease by personal hygiene, in the third place; and in the fourth place, not merely physical and mental development as it now existed, but that advance of the physical, mental, and moral development of which he believed man to be susceptible through the influence of agencies forever at work and capable of control. As no physiological law could be broken without payment of the penalty of its violation, they were quite prepared to find that the percentage of sickness and mortality between the ages of twelve and twenty was excessive, and that a large number of men of middle age were habitual valetudinarians, not by necessity, but by the commission of petty avoidable violations of physiological laws. It was the teaching of sound physiology to say that if they wished their young men to grow up strong and healthy, they should increase their supplies of food; and if they wished their men of middle age to spend the afternoon and evening of life in comfort, and with a free use of their various faculties, they should considerably lessen the amount of food which they now consumed. Physiology taught that the supply of food should be proportioned to, and should not much exceed, the waste of the body through vital and voluntary work."—(*Med. Times and Gazette.*)

—

Phosphate of Lime as a Nutrient.—"A book has lately been published in Paris, by M. Dusart, on the physiological and therapeutical properties of phosphate of lime. The author maintains, after numerous experiments in the animal kingdom, that this salt is the natural exciting agent in the functions of nutrition; that it induces the albuminoid matter to assume the cellular shape, and that it controls the formation of tissues. In short, according to M. Dusart, phosphate of lime is eminently an agent of nutrition. This view holds good, also, in respect of the vegetable kingdom, and the author asserts that the salt in question is concentrated in the leaf bud, but is almost absent from the fully-developed leaf, so as to become concentrated in the seed preparing for the ultimate development of the embryo. M. Dusart points out that the phosphate of lime is always conjoined with nitrogenous matter in plants, and that the relative proportion of the salt and the nitrogen is always identical, wherever they are met with. In animals the same phenomena take place, and, when they are made to feed much upon the phosphate, they absorb more food, and increase rapidly in weight, owing to the transfor-

mation of the albuminoid matter contained in the food into muscular fibre."—(*Lancet.*)

"*Gymnastics as a Remedy for Physical Debility.*—The following extract from a paper by Archibald Maclaren, of the Oxford Gymnasium, published in the last number of the *Herald of Health*, shows in a striking manner the power of properly-directed exercise to restore muscular power and to develop that of persons naturally weak:

"'The first detachment of non-commissioned officers, twelve in number, sent to me to qualify as instructors for the army, were selected from all branches of the service. They ranged between nineteen and twenty-nine years of age, between five feet five inches and six feet in height, between nine stone two pounds and twelve stone six pounds in weight, and had seen from two to twelve years' service. I confess I felt greatly discomfited at the appearance of this detachment, so different in every physical attribute; I perceived the difficulty, the very great difficulty of working them in the same squad at the same exercises; and the unfitness of some of them for a duty so special as the instruction of beginners in a new system of bodily exercise—a system in which I have found it necessary to lay down as an absolute rule, that every exercise in every lesson shall be executed in its perfect form by the instructor previous to the attempt of the learner; knowing from experience how important is example in the acquisition of all physical movements, and how widely the exercises might miss of their object if unworthily represented by an inferior instructor. But I also saw that the detachment presented perhaps as fair a sample of the army as it was possible to obtain in the same number of men, and that if I closely observed the results of the system upon these men, the weak and the strong, the short and the tall, the robust and the delicate, I should be furnished with a fair idea of what would be the results of the system upon the army at large. I therefore received the detachment just as it stood, and following my method of periodic measurements, I carefully ascertained and registered the developments of each at the commencement of his course of instruction, and at certain intervals throughout its progress.

"'The muscular additions to the arms and shoulders and the expansion of the chest were so great as to have absolutely a ludicrous and embarrassing result; for before the fourth month several of the men could not get into their uniforms, jackets, and tunics, without assistance, and when they had got them on they could not get them to meet down the middle by a hand's breadth. In a month more they could not get into them at all, and new clothing had to be procured, pending the arrival of which the men had to go to and from the gymnasium in their great-coats. One of these men had gained five inches in actual girth of chest. Now, who shall tell the value of these five inches of chest, five inches of additional space for the heart and lungs to work in? There is no computing its value, no power of computing it at all; and before such an addition as this could be made to this part of the body, the whole frame must have received a proportionate gain. For the exercises of the system are addressed to the whole body, and to the whole body equally, and before this addition could be made to the chest every spot and point of the frame must have been improved also—every organ within the body must have been proportionably strengthened.

"'But I tried another method of recording the results of the exercises. I had these men photographed naked to the waist shortly after the beginning of the course and again at its close; and the change in all, even in these small portraits, is very distinct and most notably so in the youngest, a youth of nineteen, and as I had anticipated in him, not merely in the acquisition of muscle, but in a readjustment and expansion of the osseous framework upon which the muscles are distributed.

"'But there was one change—the greatest of all—and to which all other changes are but means to an end—are but evidences more or less distinct, that this end has been accomplished, a change which I could not record, which can never be recorded, but which was to me, and to all who had ever seen the men, most impressively evident; and that was the change in bodily activity, dexterity, presence of mind, and endurance of fatigue; a change a hundredfold more impressive than anything the tape-measure or the weighing-chair can ever reveal.'"—(*Sci. Amer.*)

—

"*Cause of the Fatigue to the Eyes caused by Artificial Light.* V. Meunier.—The author states that the great difference between sun and artificial light is due to the fact that, of the light emitted from the former, about half the quantity of rays are luminous and calorific at the same time; but, as regards our artificial light, for ordinary oil (colza oil), the amount of non-luminous yet calorific rays is 90 per cent.; for white-hot platinum, 98 per cent.; alcohol flame, 99 per cent.; electric light, 80, and gas-light 90 per cent.; while for petroleum and paraffin oils the amount is 94 per cent. It is this large quantity of caloric rays in artificial light which causes the fatigue to the eyes; but this inconvenience may, according to the author, be almost entirely obviated by intercepting the thermic rays by glass, or, better yet, mica plates. The use of these renders the light soft and agreeable to the eyes."—(*Cosmos* and *Chem. News.*)

—

Inflammation.—"To give a summary of what Bence Jones' views of inflammation are, we may say that it has its origin in the causes which produce the natural heat of the body; but the oxidation rises to peroxidation, followed by increased motion of the blood globules, from which precipitate action or obstruction of the blood-vessels arises, followed by increased tension, increased pressure, and increased effusion of lymph from the liquor sanguinis. Lastly, from the increased supply of materials, the increased heat, the increased and precipitate effusion of lymph, an entire and visible change in the nutrition of the part follows, followed by increased morbid growth, greater and more rapid destruction, and slower and final death or recovery of the normal condition of the affected parts."—(Dr. Peters, *Medical Gazette* and *Nashville Jour. Med.*)

—

"*Reproduction of Bone.*—At a meeting of the Medical Society of the County of New York (*Medical Record*), Dr. Wm. R. Whitehead read a paper on this subject. Assuming that the conditions which regulate bone growth, could we fully discover them, would be found as constant in their action as those which govern the phenomena of inorganic nature, the speaker proceeded to give his views of the true method of

investigation to be pursued, and to review the history of opinion upon the subject of osteogenesis, touching also upon the general history of experimental research in medicine and its cognate sciences. It was important to seek for the minor laws that modify the working of the more general ones, producing perturbations which, whether seen in the growth of a cell, in the formation of a crystal, or in the motions of a planet, will prove, when these laws are discovered, to be not fortuitous, but regular. And to aid in these researches it was important to bring the results of a broad generalization to bear upon each limited department of study.

"To Duhamel, in the last century, when France was the theatre of the highest intellectual activity, was due the discovery of the property of the periosteum to reproduce bone. The theory suggested by his studies in vegetable physiology he established by experiment. It was opposed by his cotemporaries and rejected by Bichat and Scarpa, who for a time held almost undisputed sway over medical opinion. Later, Dupuytren admitted the action of the periosteum in forming the 'provisional callus;' but it was only about a century after Duhamel's discovery that it was forced into general recognition by the efforts of many investigators, prominent among whom was Flourens. At present Sédillot is the leading opponent of the doctrine that the detached periosteum has the power to reproduce bone, maintaining that the only way of insuring regeneration, in cases of necrosis, is to scoop out (*évider*) the bone in such a manner as to leave its outer layer still adhering to the periosteum. He has been ably refuted, and the efficacy of subperiosteal resection fully established by Holmes and many others. Among the surgeons in this city whose experience upon this point would seem to be conclusive, may be mentioned Dr. James R. Wood.

"But the repair of bone is not left dependent upon the periosteum alone. The medullary tissue has a similar power, which, as Goujon has conclusively shown, it may exhibit after transplantation into vascular parts, especially in early life, when it contains an abundance of calcareous salts. But it is far less likely to produce bone than is the periosteum under similar conditions, and the bone produced is soon absorbed, while that originating from periosteum is apt to be permanent. As to the so-called medullary membrane or endosteum, its functions, whether of reproduction or absorption, cannot be regarded as settled; and indeed its very existence is in dispute.

"Although the medullary tissue stands next to the periosteum in osteogenetic power, yet it shares this with nearly all cellular and fibrous tissues, and even muscular tissue may become ossified under favoring conditions. These conditions would seem to be chiefly long-continued or repeated irritation, in connection with 'a perverted assimilation of the calcareous salts of the blood.' The presence of some of the proper osseous tissues in a state of irritation is also regarded by Ollier as conducive to ossification of the neighboring parts.

"The effort to obtain reproduction of bone by transplantation of periosteal flaps (as distinguished from subperiosteal resection), so successful in many of the experiments upon animals, has not commonly met with the same success in man. Still, its satisfactory results, under good conditions, are sufficiently numerous to warrant its recognition as an important surgical procedure, likely in the future to receive a wider application. At present, perhaps, the best illustrations of its value are

to be seen in Langenbeck's operation for closure of cleft of the hard palate, known as muco-periosteal aranoplasty. The speaker had—in two cases of this operation, which he had published—convinced himself that the cleft in the palate might thus be closed by a growth of new bone.

"In conclusion, Dr. Whitehead related three experiments of subperiosteal resection which he had made upon rabbits, and exhibited the specimens, showing their results.

"Dr. J. C. Nott said that some thirty years ago Dr. Toner, now of California, then a young man commencing practice, had published several cases of onychia, in which he had removed the phalanx, leaving the periosteum, and obtained a reproduction of the bone. Impressed by these cases, the speaker had himself followed this practice ever since, and with success. He had heard that old Dr. Dudley was accustomed to treat onychia in the same manner. In a case of necrosis of the upper jaw he had, in removing the bone, left its periosteum in situ, and the bone was regenerated.

"Dr. Sayre had from his earliest practice removed phalanges in the manner above described, which he had been taught by Dr. Dudley. It was very important in such cases to dress the finger during the process of healing, so as to preserve its normal shape, otherwise the nail would become hooked over, or some other deformity result. One of the speaker's sons had smashed his finger throughout its whole length, so that at first amputation seemed unavoidable. But by careful preservation of all the periosteum almost complete reproduction of all the phalanges was secured, and the finger was now serviceable, though somewhat shorter than its fellows. The doctor had resected subperiosteally four and one-half inches of the femur of a young man. The bone was completely reproduced, the limb equal in length to the other; and the lad had last winter won a prize in a skating match.

"Dr. Chadsey related a case of necrosis of the entire tibia, which was removed as a sequestrum, new bone having formed around it firm and serviceable, though at first large and misshapen. It gradually became reduced to about the natural size. A patient of his had been kicked by a horse above the eyebrow, severely comminuting the outer table. In removing the pieces of bone, the periosteum was left attached to the skin, and the lost bone was restored, with no depression or deformity.

"Dr. Bibbins referred to two cases of necrosis of the lower jaw, from gangrenous stomatitis in children, which had come under his care at the Nursery Hospital, Randall's Island, in 1850. In one of them he had resected the bone from the canine tooth to the angle of the same side; in the other, from the canine tooth to the angle of the opposite side. The periosteum was carefully left in both cases, and in both the part removed was reproduced, though of course without teeth or alveolar process."—(*Med. and Surg. Reporter.*)

—

"*Fissured Palate: the Proper Age for Operation.*—M. Ehrmann, of Mulhouse, has sent to the Surgical Society of Paris five cases of this kind, involving the hard palate. The little patients were respectively of the age of three years and a half, four months and a half, eight months, eight weeks, and twenty-seven months. The author had only one case of failure, and used chloroform in all. A sixth case is also mentioned (seven months and a half), where the patient died of hemorrhage. M.

Ehrmann insists especially on the advantage of having the child well fed, on a complete division of muscles, on the careful application of metallic sutures left from twelve to twenty days, etc. M. Lefort observed, after the reading of the paper, how vastly Mr. Thomas Smith's gag facilitated the operation. In the introduction M. Ehrmann had occasion to state that, out of twenty cases of staphyloraphy in children from fifteen days to three years and a half old, there had been fifteen failures, among which was one death, leaving five successful cases."—(*Lancet.*)

Ranula. Extract from a Clinical Lecture by Frederick C. Skey, C.B., F.R.S., Consulting Surgeon to St. Bartholomew's Hospital, etc.—(*Lancet*): "Ranula consists in a collection of glairy, albuminous fluid within a cyst formed under the tongue, varying in size from that of a cherry-stone to that of an orange. It is by some authorities considered to be a dilated orifice of a sublingual duct, or of that of the submaxillary gland; by others, that it is a formation independent of these natural orifices. I incline to the former pathology, from the fact of my having extracted a small calculus from the orifice of a duct in a case of ranula, on the removal of which the disease underwent a spontaneous cure. When small, and, it may be presumed, in its early stage, the membranous cyst is thin, has the appearance of translucency, and is marked by minute veins coursing over it from below upward. When at the greatest magnitude I have ever seen it, its cyst is thick and fleshy, and it extends from below the floor of the mouth downward to the level of the cricoid cartilage, forming a large tumor, palpable to sight as well as to touch. Within the mouth it occupies the entire cavity from the floor to the roof, the tongue being pushed backward, having the apex in contact with the soft palate. Deglutition is greatly impaired, and the attempt to swallow solid food is frustrated by the paralyzed condition of the agents engaged in that act. Thus the constitution suffers from partial inanition, and the disease, trivial enough in its early stages, now makes serious inroads on the physical health.

"Now, what are the resources of the surgeon? You will tell me either to snip out a piece of the cyst, or to apply nitrate of silver, or, with heroic daring, to dissect out the entire cyst. But a far simpler and far more efficient remedy than either is a simple thread of silk or flax, passed by means of a much-curved needle through the centre of the tumor. It is desirable that the seton-thread be passed through the centre, and not through the side, of the tumor. At the expiration of five or six days, or sometimes earlier, the ranula will be found reduced to less than half its original size, leaving the thread at some distance from it, but still clinging to the mucous membrane. Of course you remove this first thread, and apply a second in like manner through the residue of the tumor, which will finally disappear in the course of three or four days. The large cysts I have described, and of which I have treated several, are amenable to the same treatment. The thread must be passed through the long axis of the swelling from the mouth downward. The needle must be strong and nearly straight, and the thread thick in proportion; and the point of the needle is brought out through the skin at the lowest point at which the swelling is perceptible, and the two ends tied in a knot at the angle of the mouth. The reduction in the size of the swelling may be dated from a short interval of a few days

from that of the introduction of the thread. I have never failed to effect a complete cure of ranula by these means, be the disease large or small; and the pain attendant on the entire treatment amounts to almost nothing. There is no danger of hemorrhage from the introduction of the needle in the large cases, because the tumor in the neck is superficial, leaving the carotid artery and its branches in their natural relations to the structures beneath it. The only vessel requiring observation and avoidance is the external jugular vein.

"The seton-thread is a very efficient agent of cure in some cases of *Nævus.* It is not superior to treatment by escharotics in all cases. It is slow in its action, requiring the lapse of weeks; but it has the advantage of saving the skin from destruction, and of leaving a less palpable scar than any other remedy with which I am acquainted. If the nævus is large, the threads should be passed across the morbid growth in various directions, and not necessarily through the center, but occupying its substance in all directions. The swelling, if large, may require six, eight, or ten threads. The object to be obtained is suppuration, and when obtained, and detected by the oozing of pus, the thread or threads should be removed; and, if conveniently placed for the purpose, a little pressure should be applied."

Glycerin and Carbolic Acid in Disease of Antrum.—G. W. Semple, M.D., of Hampton, Va., records in the *Medical Bulletin* (*Med. and Surg. Reporter*) the following case: "On the 1st of February last, a young gentleman, 23 years old, of delicate constitution, with a narrow chest, who had suffered from a chronic cough for four months, applied for advice. To my surprise, no abnormal sounds, either on auscultation or percussion, were detected. On inspection of the throat, the uvula was found elongated, and the whole mucous membrane of the velum palati and pharynx turgid and congested. There was a free muco-purulent expectoration tinged with blood, and it was observed to be drawn back from the nose and hawked up after the cough. The patient stated that about once in twenty-four hours, after much effort to draw it back from the right nostril, he hawked up something hard, coated with bloody matter, and this he did the same afternoon in my presence. The pellet was found, on examination, to consist of hardened muco-purulent matter mixed with blood, and to be a perfect mould of the antrum, with a projection on it which entered into the nostril, and by which it was drawn out from the antrum. The odor in the nose was very fetid, and was more disgusting to himself than to others. I was about to order an injection of the nasal cavities with a solution of carbolic acid, when, recollecting the property glycerin possesses of diffusing itself over any surface on which it is applied, a small quantity of glycerin in which carbolic acid ♏v to f℥j was dissolved was introduced into the nostril, on the finger. In a few moments the patient said: 'I feel the same sensation in my cheek and over the brow as in the nostril,' and soon after, 'I taste something very sweet on my palate.' Satisfied with the experiment, I directed him to use the medicine, in the same way, twice a day, and to use, three or four times a day, a gargle of glycerin f℥j, carbolic acid ʒj,—a teaspoonful to a tumbler of water. A copious thin mucous secretion was discharged from the nostril, sometimes tinged with blood, but not another pellet was discharged. The fetor immediately ceased, and the disease, both of the throat and antrum, was cured

within twenty days. The patient stated that the symptoms from which he suffered had immediately followed a severe attack of catarrh, contracted about the 1st of October, which continued, with fever, for eight or ten days. Glycerin is so general a solvent, that almost any medicine that may be desired to be used in the treatment of diseases of the nasal cavities may, through its agency, be applied. And though it is not difficult for an intelligent patient himself to inject the nasal cavities, yet this method of applying remedies is much more convenient."

—

"*Malignant Disease of Left Superior Maxilla; Successive Operations, with Improvement; Death eventually from Erysipelas.* Case under the care of Mr. Cowell, Westminster Hospital.—The following account is derived from the notes of Mr. Richard Davy, surgical registrar:

"'T. C——, aged fifty-two, a laborer, was admitted on the 22d of March, 1870. He had presented himself in the out-patient room, about two months previously, with two prominent symptoms. 1. Pain in the left upper jaw, from which he had suffered for nearly two months, and on account of which two molar teeth had been extracted without relief. 2. Obstruction of both nostrils. There was no enlargement about the cheek or jaw. Mr. Cowell removed some gelatinous polypi from the nose on both sides. Some smart hemorrhage followed, and some relief to the right nostril, but none to the left. A fortnight later some more mucous polypi were removed, but without any better result. After another two weeks the pain was found to be increasing, and a little fullness was visible in the hard palate on the left side, but still no increase of size in the cheek. This fullness rapidly increased, involving the whole left side of the hard palate, a small portion of the soft palate, and the alveolar processes where the teeth had been removed, and projected downward into the mouth as a smooth, firm, globular swelling, through which the two ragged openings of the two teeth appeared. In this condition he was admitted. There was some puffiness of the cheek and lower lid, but no enlargement of the antrum, nor even of the upper part of the superior maxilla. His speech was thickened and nasal in tone; deglutition was perfect, but mastication was at first difficult, and, since his admission into the hospital, impossible. He could only take sopped food.

"'March 29. The incisions adopted were through the middle line of the lip, along the side of the nostril and across the cheek, beneath the lower lid, and the flaps turned outward. Mr. Cowell said that he preferred this plan (Dieffenbach's) in the cases where it will give sufficient room, to making the incision from the angle of the mouth to the zygoma, because the hemorrhage is generally less, and the risk of deformity is avoided. When the jaw had been removed the antrum was found to be completely filled with what seemed to be a gliomatous growth, and which was firmly adherent to the bones forming the floor of the orbit. The soft parts were, therefore, carefully dissected upward, and the malar bone and floor of the orbit were entirely removed. The greater part of the soft palate was also taken away. The bleeding was less than is usual in these cases. A solution of chloride of zinc was applied to the surface of the cavity; the space was then filled with lint, and the flap readjusted with silver-wire sutures. No external dressing was applied.

"'The growth was large, and, starting apparently from the superior maxilla, had become firmly adherent to the bones with which it had come in contact, and filled every cavity. Microscopically, the growth was found to be fibro-cellular; the nucleus multiple; cell-wall varying, but mostly large and oval.

"'The external wounds rapidly healed, and the cavity in the mouth slimed over with moist and dried mucus. Pain was gone, and the patient was cheerful, swallowed his food without difficulty, and did exceedingly well. There was no deformity except a slight flattening of the cheek.

"'A month afterward a growth was found to be growing from the anterior edge of the remaining portion of the soft palate. On April 30th the growth had attained the size of a walnut, and was removed by Mr. Cowell, under chloroform. Smart hemorrhage followed; chloride-of-zinc paste was applied, and he had iced water to drink. The growth was microscopically of the same character.

"'The patient did well, and went out for several drives. On May 17th, however, he was attacked with erysipelas in the head, and he gradually sank from diarrhœa and exhaustion, and died May 25th. No autopsy was permitted.'"—(*Lancet.*)

Exhausting Needle-trocar.—At the late annual meeting of the British Medical Association (*Lancet*), "Dr. Protheroe Smith read a paper on this as 'a means for the diagnosis and treatment of tumors and effusions.' He reverted to his former exhibition, in 1867 and subsequent years, of his needle-trocars on a small scale, in order to introduce the description of a much larger and more complete instrument he now exhibited. The instrument consists of a large receiver, which, when exhausted of air, is connected with a fine exploring needle-trocar by means of an elastic tube, a portion of which near the needle is of glass. The tube and receiver are both closed with stop-cocks. To use the apparatus, the receiver is well exhausted, the needle introduced into the tumor, the tube is attached, and on the taps being turned on, the fluid rapidly flows into the receiver, passing through the glass portion of the tube, by which its character can be easily detected. By means of this instrument a cyst can be emptied without the least admission of air; and, without removing the trocar, fluid may be injected. There is scarcely a portion of the body, however delicate, that cannot be traversed with these fine needles, with no risk of subsequent mischief."

Acetate of Lead for Toothache.—"Dr. Henry T. Reynolds, of Baltimore, writes to us that 'for eighteen months I have been using acetate of lead as a remedy for what Burns calls "the hell of all diseases"—toothache. I find it to act better than any of the numerous remedies proposed in the books, and in cases in which it is applicable the relief is instantaneous. Let the patient apply from one to three grains to the cavity for a moment or two, then spit it out. It fails in fewer cases than any remedy that I have tried,—not more than eight per cent.'"—(*Med. News.*)

"*Healing Wounds by Transplantation.*—We have authority for announcing that Professor Frank H. Hamilton has already tested the method of healing denuded surfaces by transplanting a small piece of

skin from elsewhere in more than thirty cases at Charity Hospital, varying the operation in many ways, with the view of determining which may be the best mode of performing it. Of course, it is too soon to speak confidently of the results as yet; but we are at liberty to state that two of the cases may even now be pronounced undoubted successes."—(*Medical Gazette.*)

Sulpho-carbolates, and the Antiseptic Method in Medicine.—At the late annual meeting of the British Medical Association, Dr. A. Ernest Sansom read a paper on this subject, "in which he alluded to the difference of opinion with regard to what is termed the 'germ theory' of disease. He thought that much of the diversity depended on the connotation of the word 'germ.' There is abundant evidence that the 'contagia' of transmissible disease are material and organic; they bear a strong analogy to ferments in their mode of operation; whatever the initial cause of each, the existence of organized material possessed of reproductive powers is intimately bound up with both processes. The author alluded to the recent researches of Chauveau on vaccine, glanders, and sheep-pox, as showing that the activity of the 'contagia' depended on the solid particles proved by Beale to be actively-moving masses of bioplasm. He considered that the efficacy of disinfectant and antiseptic measures was due to no obvious chemical influence, but to the poisoning of those septic organisms which are intermediary agents of decomposition between organic and inorganic matter. He thought that the proliferation of contagia (bioplasm) might be checked within the living body, and discussed Polli's treatment by the sulphites. From the well-known properties of carbolic acid he hoped more from the sulpho-carbolates, of which he gave a succinct description. (1) The *alkaline sulpho-carbolates.* There was evidence of great success from the administration of the sodium salt in throat ulcerations and in scarlatina. There was promise of success in variola. In enteric fever, Dr. Ligertwood, of Newbury, considered the treatment to be efficacious. (2) *Sulpho-carbolates of alkaline-earth metals.* Of these the most interesting is the calcium salt, of extraordinary solubility, which the author had employed in cases of rickets with remarkable success. (3) *Sulpho-carbolates of the metals.* The zinc and copper salts had been used by surgeons, especially by Mr. John Wood, as antiseptic dressings for wounds, and a very favorable opinion of them had been given. The author had employed the iron salt internally, with varying success; he was doubtful whether it had any advantage over other salts of iron. In conclusion, he hoped that the remedies would be tried upon their merits, as he considered that, all theory apart, they would prove a useful addition to the materia medica."—(*Lancet.*)

Styptics,—their Modus Operandi.—The *New York Med. Jour.* contains an abstract of a paper on "Intra-uterine Medication," by Dr. J. C. Nott, from which we make the following extracts on this subject:

"Styptics arrest hemorrhage either by coagulating the blood or by constricting the vessels. To secure their action it is necessary to keep them for some little time against the bleeding part. The most effective way to control uterine hemorrhage is to inject iodine, and then plug the cervix with cotton and persulphate of iron.

"To determine the coagulating effect upon albumen of different re-

agents, the doctor had added to white of egg, in test-tubes, a few drops each of undiluted solution of persulphate of iron, saturated solution of chromic acid, same of tannin, same of nitrate of silver, pure carbolic acid, and Churchill's tincture of iodine. These experiments were repeated before the society, and the test-tubes handed round. The iodine produced only a flocculent precipitate; but each of the other reagents combined at once with about its own bulk of albumen, in a firm, globular coagulum, which could neither be diffused throughout the mass nor increased in size by shaking.

"Next, to imitate the most watery of the uterine leucorrhœal discharges, the white of egg was diluted with four parts of water, and submitted to the reagents as before.

"Persulphate of iron (Squibb's solution) coagulated the whole mass into a jelly.

"Saturated solution of chromic acid instantly formed a coagulum, less solid than before, but still too consistent to pass through a canula. Chromic acid the doctor considered a much more powerful intra-uterine remedy than persulphate of iron, and far more dangerous. If not neutralized by the secretions, it might produce the most terrible results. It was the most destructive to animal tissues of all agents used in medicine, and a strong solution would, in twenty minutes, completely dissolve a small animal.

"Tannin produced a coagulum easily washed away, giving the mass only a syrupy consistence. This agent had, in common with persulphate of iron, the merit of being but slightly irritant.

"Nitrate of silver produced a profuse flocculent precipitate; and sulphate of copper had the same effect. Alum produced no coagulum.

"Saturated solution of carbolic acid in water produced a pulverulent precipitate. The doctor had found the injection of this solution give much pain, where that of iodine caused almost none. It was of much value, however, as an antiseptic.

"The precipitate produced by iodine was not such as to interfere with the fluidity of the dilute albumen. It was something more than a stimulant, a caustic, a styptic; it was a remedy *sui generis*, whose curative action could not be fully explained. The fact of its ready absorption made it especially valuable where we wished to affect the deeper tissues, as in chronic inflammation. Nitrate of silver or chromic acid, on the other hand, had only a stimulant or caustic action; indeed, the absorption of the former would produce toxic effects."

Hydrated Chloride of Aluminium as an Antiseptic.—"The hydrated chloride of aluminium, to which Mr. John Gamgee has recently drawn the attention of medical men and of the general public, appears to be a valuable antiseptic. It is quite as potent as chloride of zinc or carbolic acid, and is at the same time non-poisonous, and devoid of unpleasant smell of every kind. These qualities will no doubt insure its being extensively used, and at no distant date we may expect it to displace the antiseptics which are at present in vogue.

"The anhydrous chloride of aluminium, which is manufactured in order to serve for the preparation of metallic aluminium, is far too costly on account of the troublesome nature of the process by which it is prepared,—to wit, by passing chlorine at high temperatures over a mixture

of aluminium and charcoal. By placing the anhydrous chloride of aluminium in water it is of course converted into hydrated chloride.

"The most economical process for the preparation of the hydrated chloride of aluminium appears to be by double decomposition between sulphate of alumina and chloride of calcium (both of which are cheap commercial products). When solutions of these two salts are mixed together, sulphate of lime is formed and appears as a precipitate, while the hydrated chloride of aluminium remains dissolved.

"On allowing the aqueous solution to evaporate at a very gentle heat, and afterward cooling, crystals of hydrated chloride are produced. If an attempt be made to drive off the water from the hydrated chloride by the application of heat, decomposition will take place. Hydrochloric acid is evolved under these conditions, and oxychloride of aluminium is formed, and, by pushing the process, alumina is obtained as the ultimate fixed product."—(*Lancet.*)

Impurities of Atmosphere.—"At a meeting of the Royal Irish Academy, held June 13th, Dr. George Sigerson, F.L.S., read a paper entitled 'Further Researches on the Atmosphere.' He stated that the results of analyses of *ordinary atmospheres*, such as those of the town, the country, and the sea-breeze, which he had communicated to the Academy on a former occasion, had been fully confirmed by later investigations. The subject of the present paper was the examination of *special atmospheres*, of which the author proceeded to speak in detail. In the air of an *iron factory* he found a dust of a black color and friable in nature, which was composed of carbon, iron, and ash. The iron was present in small rough and jagged pieces, and also in hollow balls averaging one two-thousandth of an inch in diameter. These iron globules were translucent. In a *shirt factory* air filaments of linen and cotton were present in great numbers, and minute eggs were also seen under the microscope, but these were, perhaps, of accidental origin. *Scotch mills*, from the nature and quality of the spongy, spiky dust which abounded in them, Dr. Sigerson branded as human slaughter-houses. In the dust of printing-offices perceptible traces of antimony were detected by chemical examination. *Stable air* was shown to contain equine hair, cuticles, epithelium, moth cells, ovules, various fungi, besides a large amount of other forms of organic matter. The air of a dissecting-room was also largely impregnated with organic particles, and a microscopical examination of the dust collected resolved it into portions of white and yellow fibrous tissue, fibrillæ of voluntary and involuntary muscle, fragments of epithelium, and *débris*. In *smokers' air* numerous globules of hot nicotine were observed, of a pre-eminently hurtful character. Very similar to this was the air inhaled by *tea-tasters*, in which, besides particles of cellular tissue, a narcotic oil of very deadly properties abounded in the form of minute cells. In concluding his paper, Dr. Sigerson took occasion to remark that the carbon which existed in the atmospheres of large cities was of use in counteracting the injurious effects of the presence of albuminoid ammonia, lately described by Dr. Angus Smith, of Manchester, and that, consequently, limits should be placed to the consumption of smoke in factories, etc. The paper was illustrated by large diagrams representing the microscopical appearances of the different forms of dust spoken of above."—(*British Med. Journal* and *Medical Record.*)

Aromatic and Balsamic Odors as Disinfectants.—In his address to the Public Medicine Section of the British Medical Association (*Med. Times and Gazette*), Dr. W. H. Rumsey noticed "a remarkable series of observations which Prof. Mantegazza has reported to the Institute of Lombardy. The experiments were not made under the dull sky of Britain, but in sunny Italy. We have all heard how Acron of Agrigentum, and other followers of Empedocles, the physicist, employed aromatic and balsamic herbs as preventives of pestilence, often burning them, sometimes planting them round their cities. So also Herodian records that in the plague which devastated Italy in the second century —the counsel of the doctors having been taken—strangers crowding into Rome were directed to retreat to Laurentum, now San Lorenzo, that by a cooler atmosphere, and by the odor of laurel, they might escape the danger of infection. Some of us may have smiled at the latter part of the advice. Could the scent of herbs and flowers do more than conceal the presence of infectious matter in the air? Mantegazza now replies in the affirmative. He says that in the oxidation of the essences of odoriferous plants a large quantity of ozone is evolved, at least as much as is produced by phosphorus or electricity; also, that in the greater number of these cases ozone is developed only by the direct rays of the sun, although in others the action, commencing in solar light, is found to continue in darkness. Some details of these interesting experiments have appeared in the scientific periodicals, so I need only mention that among the plants which largely develop ozone on exposure to the rays of the sun, are cherry-laurel, clove, and lavender; among flowers, the narcissus, hyacinth, and mignonette; and among perfumes, similarly exposed, eau-de-Cologne, oil of bergamot, and some aromatic tinctures. Flowers destitute of perfume are said not to produce ozone. The professor therefore recommends the cultivation of herbs and odorous flowers in marshy districts, and in places infected with animal emanations.

"This destruction of the demon malaria by a spirit begotten by sunlight out of flowers—if it be confirmed by subsequent observation—not only explains the good effects of what might seem to have been merely speculative or empirical advice, but also affords a beautiful confirmation of an ancient myth by modern science. When Apollo the Healer, by his life-inspiring and health-restoring rays, penetrates the loveliest objects in creation, and draws forth from them a mysterious purifier, a mighty but invisible disinfectant, the god of medicine may be said to administer to a plague-stricken people a most potent remedy concealed in the most grateful and attractive of forms."

—

"*Cotton Respirators.* Dr. Jouglet.—The author, taking the hint thrown out by Prof. Tyndall, has been experimenting on the use of cotton respirators, and states that by their application the disease known as miner's anæmia, and also the dangers of the effects of lead, copper, and mercury, to those who have to handle these metals, or work in vapors or dust thereof, may be prevented."—(*Comptes Rendus* and *Chem. News.*)

—

"*Death by Chloroform prevented by Electricity.*—On the 22d of November, 1866, Dr. Danzel administered chloroform for the removal of a cancer. After the operation the patient ceased to breathe, and opening the windows, artificial respiration, and all other agencies

proved of no avail, when recourse was had to electricity. One pole of the battery was applied to the neck, the other to the epigastrium. There was soon a movement of the muscles, and by degrees respiration was restored. There is no doubt that death would have ensued without the application of electricity, and as this remedy has been applied with success in several other cases, it is worthy of note on the part of physicians generally."—(*Jour. Applied Chemistry.*)

Benzole for preserving Pathological and Anatomical Specimens.—In a pamphlet on this subject (*Chicago Med. Jour.*), "Prof. Clapham, Iowa State University, explains the advantages of the ordinary benzole of commerce over alcohol, glycerin, etc. in the preservation of soft preparations, in that it does not become discolored by contact with the animal fluids, or cause shreddiness or disintegration of them. It remains free from turbidity, however much *débris* may subside. It does not bleach. Its great brilliancy and high refracting power endow it with superior advantages for displaying dissections of great delicacy and minuteness. It is of trivial cost (about one-eighth that of alcohol), and resists low temperature where dilute alcohol speedily congeals. In the pamphlet directions are given for its use. Prof. Clapham claims priority in the introduction of this agent for this purpose."

Photography in Medical Instruction.—"Optics and photography are now employed with success in imparting medical instruction to students. The leading medical hospitals and colleges in this country and Europe now regularly employ skilled photographers, whose business it is to take photographs from the patients of all peculiar manifestations of disease or surgery. Faithful representations of the general appearance of a patient or of a diseased member, such as the limbs, the throat, the eyes, the hair, are obtained. These may be subsequently enlarged or reduced, as desired, and reproduced on glass, in the form of transparencies, then colored with transparent pigments. By means of the magic lantern, the pictures are thrown upon a screen and magnified, so that the minutest parts are rendered clearly visible to large audiences. For medical instruction, this method is of great value, by reason of its extraordinary accuracy and distinctness."—(*Scientific American.*)

"*Amorphous Silica as a means of Fixing Pigments and Dyes.* Dr. M. Reimann.—The author describes at some length a series of experiments made with the view to apply amorphous silica (as obtained by precipitating a solution of so-called water-glass, silicate of soda, or potassa, with an acid, and collecting, washing, and drying the precipitate in the ordinary way) for absorbing the solutions of fuchsine, aniline blue, etc., and to apply the colored powder, so prepared, as a pigment for various materials. The author states that glass, first superficially acted upon by hydrofluoric acid, and next mordanted, as is usual for cotton, assumes, when submitted to the processes in use for dyeing fibre, precisely similar colors as that fibre, and that this effect is caused by the amorphous silica contained in the glass and made active by the hydrofluoric acid."—(*Polytechnisches Jour.* and *Chem. News.*)

"*Balata.*—For some years past an article has been met with in commerce under the name of balata, which has properties intermediate

between caoutchouc and gutta-percha, and is used for similar purposes. Balata is prepared from the milky juice of the bully-tree, *Sapota Muelleri Sapotaceæ*, which is indigenous to Guiana, the product being exported to Europe, mainly from Berbice. It contains 88·49 carbon and 11·37 hydrogen. In the dried milky juice of the bully-tree, Sperlich found 81·31 carbon and 10·17 hydrogen; the balance is ascribed to oxygen."—(*Am. Journal of Pharmacy* and *Medical Record.*)

—

"*Cements for uniting Metals, etc.*—Quite as much depends upon the manner in which a cement is *applied* as upon the cement itself. The best cement that ever was compounded would prove entirely worthless if improperly applied. We have hundreds of recipes for glues, pastes, and cements of different kinds, and yet the public is constantly on the *qui vive* for new ones, and no more acceptable recipe can be sent to our popular journals than one for a new cement. Now, the truth is, that we have cements which answer every reasonable demand, when they are properly prepared and properly used. Good common glue will unite two pieces of wood so firmly that the fibres will part from each other rather than from the cementing material. Two pieces of glass can be so joined that they will part anywhere rather than on the line of union. Glass can be united to metal, or metal to metal, or stone to stone, and all so strongly that the joint will certainly not be the weakest part of the resulting mass. What are the rules to be observed in effecting this?

"The first point that demands attention is to bring the cement itself into intimate contact with the surface to be united. If glue is employed, the surface should be made so warm that the melted glue will not be chilled before it has time to effect a thorough adhesion. The same is more eminently true in regard to cements that are used in a fused state, such as mixtures of resin, shellac, and similar materials. These matters will not adhere to any substance unless the latter has been heated to nearly or quite the fusing point of the cement used. This fact was quite familiar to those who used sealing-wax in old days. When the seal was used rapidly, so as to become heated, the sealing-wax stuck to it with a firmness that was annoying—so much so that the impression was in general destroyed—from the simple fact that the sealing-wax would rather part in its own substance than at the point of adhesion to the stamp. Sealing-wax is a very good agent for uniting metal to glass or stone, provided the masses to be united are made so hot as to fuse the cement; but, if the cement is applied to them while they are cold, it will not stick at all. This fact is well known to itinerant venders of cement for uniting earthenware. By heating two pieces of delft so that they will fuse shellac, they are able to smear them with a little of this gum, and join them so that they will rather break at any other part than along the line of union. But, although people constantly see the operation performed, and buy liberally of the cement, it will be found, in nine cases out of ten, the cement proves worthless in the hands of the purchasers, simply because they do not know how to use it. They are afraid to heat a delicate glass or porcelain vessel to a sufficient degree, and they are apt to use too much of the material, and the result is a failure.

"The great obstacles to the junction of any two surfaces are air and dirt. The former is universally present, the latter is due to accident or

carelessness. All surfaces are covered with a thin adhering layer of air, which it is difficult to remove, and which, although it may at first sight appear improbable, bears a relation to the outer surface of most bodies different from that maintained by the air of a few lines away. The reality of the existence of this adhering layer of air is well known to all who are familiar with electrotype manipulation. It is also seen in the case of highly polished metals, which may be immersed in water without becoming wet. Unless this adhering layer of air is displaced, the cement cannot adhere to the surface to which it is applied, simply because it cannot come into contact with it. The most efficient agent in displacing this air is heat. Metals warmed to a point a little above 200° become instantly and completely wet when immersed in water. Hence, for cements that are used in a fused condition, heat is the most efficient means of bringing them in contact with the surfaces to which they are to be applied. In the case of glue, the adhesion is best attained by moderate pressure and friction. Another very important point is to use as *little* cement, as possible. When the surfaces are separated by a large mass of cement we have to depend upon the strength of the cement itself, and not upon its adhesion to the surfaces which it is used to join; and, in general, cements are comparatively brittle."—(*English Mechanic* and *American Artisan.*)

Sharpening Instruments by Magnetism.—The *Scientific Journal* says that "a German telegraph operator has discovered a mode of sharpening, with mathematical accuracy, any number of steel or iron wires, by the agency of the magnetic current. The discovery may be applied to the manufacture of pins and needles, and do away with the present process of grinding the points, so injurious and extensively fatal to the workmen."

"*Manganese Bronze.*—Metallic manganese promises to become of considerable importance in the arts, since the experiments of Mr. Valenciennes have shown that it will unite with different metals so as to form valuable alloys. Thus, melted together with copper, in proportions of 15 to 85, a bronze is obtained, of a beautiful color, sonorous tone, and great firmness, having much resemblance to steel in its characteristics. For many purposes this new bronze is calculated to replace the ordinary article to great advantage."—(*Phila. Ledger.*)

Removal of Iron-mould Stains from Fabrics.—"The removal of these stains is a matter of some difficulty if they have remained on a fabric for some time. The usual substances employed for this purpose (oxalic acid or quadroxalate of potassium) require placing, in concentrated solution, in contact with the material for a considerable time, thereby materially weakening and rotting the fibre. The following method is free from this objection, and will remove stains of long standing almost immediately: wet the mark with yellow sulphide of ammonium, by which it will be immediately blackened, and allow it a minute or so to penetrate; then wash out the excess of sulphide, and treat the black spot with cold dilute chlorhydric acid, by which it is immediately removed. Finally, wash well with water."—(W. B. G., *Chem. News.*)

THE

DENTAL COSMOS.

NEW SERIES.

VOL. XII. PHILADELPHIA, NOVEMBER, 1870. No. 11.

ORIGINAL COMMUNICATIONS.

FILLING vs. FILING.

BY S. G. PERRY, D.D.S., NEW YORK, N. Y.

Read before the Odontographic Society of Pennsylvania.

GENTLEMEN:—The proceedings of the Odontographic Society, published in the DENTAL COSMOS, July, 1870, contain the report of a lecture on the "Prophylactic Treatment of Caries of the Teeth," and the discussions thereon, that I have read with considerable interest. Statistics were given and strong arguments deduced in favor of this new method, and from favorable expressions of eminent members present, and the entire absence of dissent, it would seem that filing may become the next sensation in our profession.

I am of those who have not yet been convinced that it is a practice based entirely upon right principles, and while feeling great respect for its advocates, and acknowledging the strength of their arguments, I desire to offer some objections,—or rather to make the subject of filing the means of calling attention to some points in filling.

Believing in progress, and ready to try anything that promises an advance on what is already known, yet I desire undeniable evidence that this new method is better than the old, before taking such extremely radical steps as are necessary to prove it so. I should dislike to sacrifice by filing portions of teeth that I might some day feel impelled to restore with gold.

It is very justly claimed by the advocates of filing that approximal surfaces are most liable to decay when in contact, and on the principle in surgery that early intervention is necessary to prevent disastrous results, the file is used in making a separation that shall arrest decay and prevent it in the future.

This, in mouths where a destructive tendency exists, is done between certain teeth, even though indications of decay are absent. It is on the assumption, of course, that sooner or later decay will surely occur if not

anticipated in this manner. It is further claimed that approximal fillings are constantly liable to fail in preserving the teeth, owing to their position, the difficulty of properly inserting them, etc., and that as against them a smooth, free, self-cleansing surface of dentine is safer from decay. It is contended that a calcification of the fibrillæ of the tubuli occurs, which renders the exposed surface as secure as if covered by enamel.

As to approximal fillings, especially between the bicuspids and molars, all know they are the most difficult and most uncertain of all the operations the dentist is called upon to perform. But during all these years from which statistics have been collected to support the practice of filing, have we been filling this class of cavities as we are now beginning to find they *can* be filled? How long have we had the rubber dam, and how many have followed nature's plan by building the gold out, so that it shall touch the opposite tooth near the masticating surface, thereby leaving the cervical and lateral walls slightly separated, and comparatively safe from further decay?

With the old methods of keeping cavities dry, and the practice of packing gold out to the edge of the enamel and not around it, and filing the fillings to a flat surface, what could be expected but eventual decay? Approximal fillings finished in this way have the lateral and cervical walls brought directly in contact with the opposite tooth,—which in most cases is filed flat in the same manner,—and even though done by our best operators, need we be surprised that in teeth predisposed to decay they often fail? And in these exceedingly dangerous mouths it is claimed there is a greater necessity for filing. I cannot believe it will be contended that there is absolutely no danger in exposing dentine to the fluids of the mouth, so that in dangerous mouths that are considered so destructive to fillings, there must exist a corresponding danger to exposed dentine. And besides, when the teeth are all present they must come in contact near the gum, and as contact is so justly feared by the advocates of this method, we should expect decay at this poorly protected point,—not so frequently as from the larger and broader approximal surfaces, yet in many cases.

This decay from contact at the gum I have experienced in my own mouth twice in the same teeth, and not until their lost shape was restored with gold, and the gum protected by a well-built-out masticating surface, did I have a feeling of relief and security.

The advocates of filing seem to have said but little of the effect on mastication from the loss of so much of the articulating surface of teeth. This is a point to which we would ask particular attention. If, during the last few years, such improvements have been made in the operation of filling as to enable us to *save* by far the larger number of teeth we are called upon to fill, is it not time to give some attention to the form

of our fillings and the shape of the teeth? To save them from decay is our first study, but shall we rest content if more than this can be done?

Do we not often misapprehend the exact form and relation of the teeth, accustomed as we are to seeing them in the mouth, where they are so surrounded and hidden by the gum?

It is only necessary to study their form and position, as shown in a skull where they have been well developed and well preserved, to see at once for what they were designed. They increase in size as they rise from their sockets, until they touch near the grinding surface, depending upon each other for support as well as the alveoli in which they rest. And the wisdom teeth—so often considered of but little value—seem to act as props, holding them firmly together. File, or recklessly cut them, as we do in our operations on them in the mouth, and see how deformed they at once appear! Pass a separating file between them in the mouth, and it will seem that no harm has been done. Do the same with those of a skull, where they can be viewed on every side and in every relation, and then notice how the perfect form of the teeth has been destroyed. And in the loss of a portion of one must result a change in the relation of all the rest.

If we take nature as our guide and desire to attain to her pefection, it is evident that—between molars and bicuspids at least—the file should be used only as it may facilitate the operation of restoring with gold the original shape of the teeth.

I am of the opinion that teeth so filled—using the rubber dam, and packing the gold as it *can* be packed—are as safe as if decay had never touched them. The form of the gold secures the very separation of the teeth that is so desired by the advocates of filing, and the patient has the benefit and comfort of a perfect masticating surface besides. The question naturally arises: Will such fillings arrest decay and effectually resist the force constantly brought against them by mastication? If properly done, I believe they will. In mouths so destructive that they will not, I should not venture to freely leave exposed dentine.

If there must be a departure from the natural form of the tooth, I would prefer in some cases the other extreme,—that of leaving the gold in approximal cavities slightly projecting, so that it, and not the tooth, shall rest against the adjoining tooth, or the filling in the adjoining tooth, as the case may be.

I do not wish to be understood as advocating the building out of rounded knobs of gold between the teeth so that they shall be held apart, but would ask attention to the propriety of packing the gold a little beyond the original outline of the tooth, and finishing up with thin trowel-shaped files and sickle-shaped scrapers, leaving the gold when finished *quite* as full as the tooth originally, rather than pass between them a separating file that would leave a flat approximal surface. I should

prefer a slightly unnatural fullness, rather than leave a space or an unnaturally flat surface.

Of course such operations require time and great labor, and are necessarily expensive; but if they are better, we have no alternative but to perform them, since, as a profession, we are constantly flattering ourselves that we are aiming at perfection.

I do not wish to condemn absolutely the use of the file; on the contrary, I believe there are many cases where, in judicious hands, it can be used to great advantage. I have seen centrals and laterals so judiciously filed as to save them from decay, and yet without disfiguring them when viewed from the labial side. The file can be used to greater advantage between these teeth than between bicuspids and molars. With thin, sharp crowns designed for cutting, the removal of a portion of the approximo-lingual surfaces cannot impair their usefulness. Not so with the bicuspids and molars; their crowns swell as they rise from the gum, presenting a large blunt surface for mastication, and that surface, I contend, should be preserved in all its integrity.

ADHESIVE FOIL AND CONTOUR PLUGS.

BY H. GERHART, D.D.S., LEWISBURG, PA.

Read before the Susquehanna Dental Association.

In the brief report of the transactions of this body at its last meeting, published in one or two dental journals, a single sentence or two of some unpremeditated and casual remarks of mine were introduced. This has induced me to commit to paper a few words about adhesive foil and contour plugs, with a view to giving reasons for the faith that is in me.

The adhesive property of pure, clean, and perfectly dry gold foil, prepared in a way known only to manufacturers, is probably not doubted by any one. That foil with all these conditions undisturbed can, by the application of a given amount of force, be welded into a mass having a specific gravity approximating nearly to that of molten gold, is perhaps equally worthy of credence; but that a non-porous, cohesive, and firm plug, that shall not disintegrate, that shall preclude the percolation of fluids, can be made in the mouth with this foil, when the cavity of decay is extensive, is not quite so readily believed by him who observes and thinks. That this can be accomplished in exceptional cases, and by very exceptionable men, may very readily be admitted, if only for the sake of the exceptions.

In the endowment of gold foil with the property of adhesiveness, there is always added the incumbrance of a harsh temper, so that one can distinguish it by its rattle without either seeing or touching it. This harshness is an unyielding disqualification for the use to which it

was intended; in consequence of this it may not be introduced into a cavity in any considerable masses, because these masses, on account of their harshness and disposition to stick at all points, would soon choke up and clog the orifice, and form a hard, ungovernable body, but ill adapted to the walls of the cavity, which to reduce to a well-fitting and solid mass at the bottom of the cavity would almost require the force of a hydraulic press.

Of necessity the operator resorts to the introduction of minute scraps of gold, which he endeavors to weld one upon the other; and now spring up new difficulties. In order to introduce these small scraps, serrated instruments are required (whatever other valuable ends these serrations may be supposed to subserve, they are absolutely necessary to the introduction of these adhesive scraps). Now, the adhesion of gold foil is by surfaces. The introduction and consolidation of the foil by means of serrated instruments leaves a very irregular surface of innumerable small planes, to which the surface of the next layer of gold cannot be accurately adapted unless the serrations can plunge into the same pits they have before made—which is, to say the least, clearly impracticable.

The gold upon being packed becomes still harder, and it is impossible to break down the serrations left by the instrument; consequently the surfaces cannot be, throughout, brought into contact, and the adhesion in a great measure takes place by points only, and the result is a porous plug, not only in the body, but over all the mural surfaces. That this is true is clearly shown by the peculiar dark color that many teeth that have been filled (even by the most skillful operators) with adhesive foil attain—a color which teeth in the same mouth filled (by equally expert operators) with soft foil do not show.

This discoloration inevitably supervenes where there is a lack of continuity of adaptation to the walls.

To prevent caries, and to secure its own position, a plug must not only be in contact with the walls of a cavity, but must press against them,—that is, the laminæ of gold should be in a state of tension, giving to the body of the plug to some degree an expansive tendency, so that the tooth may be said to clasp or embrace the plug. This cannot be accomplished with adhesive foil. The theory upon which plugs are made with this foil requires that the gold shall be consolidated as it goes in, and once in place it cannot be forced harder against the wall; if force is applied, the gold recoils by its own elasticity, and when once a cavity is full no power that can be applied *in the mouth* can force the gold in the direction of the walls. That this can be accomplished with soft foil the experience of any old practitioner will testify.

The adhesiveness of the gold is impaired (even when the saliva is dammed out) by the humidity of the atmosphere of the mouth, each particle has its surfaces slightly moistened in spite of every precaution,

so that no very great while elapses before the plug commences to disintegrate, and is dislodged particle by particle. No extensive observation is necessary to prove this. How often do adhesive foil plugs come away piecemeal, or for want of gomphosis roll out apparently heavy as lead!

Of the value of contour plugs—prominently projecting plugs—but a few words are necessary; granting that everything can be done with adhesive foil that its most ardent admirers claim for it,—to wit, that a perfectly homogeneous, solid plug, fitting into the cavity with a perfect gomphosis, can be made with it—this question is pertinent and well put: Do large, projecting contour plugs—plugs built up and sticking out of the tooth—pay either the patient or the dentist in their practical results, leaving money out of the question?

Except in cases where the occlusion of the antagonizing tooth is in a direct line with the line of the axis of prehension of the gold by the walls of the cavity, I would say, emphatically, no! For, where there is daily and hourly application of force in any other direction, the walls are very rarely indeed strong enough long to resist it; and, if even the walls were sufficiently powerful to resist this stress, such is the ductility of gold that the plug would before a great while be loosened, even if it were cast into the cavity and did not shrink in cooling.

TEACHERS AND TEACHING.

BY P. Q. R.

When, some years ago, the writer entered upon the study of dentistry, it was with the conviction that student-life was not so much an opportunity to amass learning as to acquire wisdom. No thought had he that his instructors meant chiefly to teach him a set of formulas, and impress upon him a definite and unvarying course of treatment for each particular pathological condition.

He looked to be instructed in general, broad and comprehensive principles, based upon which he might enter with confidence upon the practice of a liberal profession, and, conforming to which, his efforts to deal with the varied aberrations from physiological conditions should be directed by an intelligent appreciation of the age, temperament, diathesis, and idiosyncrasies of his patient. He expected to be taught how to estimate life-force, and its relations; to learn how to diagnose, by taking into account all and singular the tendencies and liabilities belonging to differing constitutions, conditions, and habits of life.

With at least a moderate realization of his anticipations, he received the official indorsement of fitness for the practice of his chosen vocation, and engaged with zeal in the solution of the ever-varying problems presenting.

The recent literature of our specialty, the proceedings of dental societies, and the addresses of the so-called leaders of the profession, would, however, indicate that science has so far triumphed that there is no longer necessity for the exercise of discretion, or the recognition of principles.

We are asked to accept stated formulas, prescribed manipulations, and an unvarying routine for every operation of each class or variety, without venturing to trust our own judgment or experience, or else incur the odium of being in bondage to exploded ideas and customs.

If these positions are correct, there is no longer need for more than mere mechanical skill and aptness for following copy; and those who aspire to the exercise of higher endowments may seek in other occupations the gratification of so laudable an ambition, and leave the practice of dentistry to the Orientals, with the assurance that they possess, in an unusual degree, the requisite faculty of imitation.

In reading or listening to one of these self-elected dogmatic expounders, the lines of Goldsmith involuntarily present themselves,—

> "Well had the boding tremblers learned to trace
> The day's disasters in his morning face;
> Full well they laugh'd, with counterfeited glee,
> At all his jokes, for many a joke had he;
> Full well the busy whisper, circling round,
> Conveyed the dismal tidings when he frown'd.
> * * * * * *
> While words of learned length and thundering sound
> Amaz'd the gazing rustics rang'd around;
> And still they gazed, and still the wonder grew,
> That one small head should carry all he knew."

Seriously, is it not too late, or too soon, for members of a so-called learned profession to consent to be nose-led by those who thus seek to impose their theories and practice upon men who, if they are not a disgrace to their profession, have long since learned that there are not, and cannot be, defined and positive rules for the uniform treatment of derangements of vital organizations?

We do not object, of course, to every man expressing, no matter how earnestly, his opinions; and we most heartily approve of societies, journals, and every other channel by which men, animated by a common purpose, may exchange freely and frequently their theories and practice. Our protest is against the unreasonable and impudent assumption that any prescribed method is, without debate and without question, to be accepted as the only and infallible rule by which we are to govern ourselves; or, in default of our acquiescence and obedience, we are to be ranked with those who are either too ignorant or too mercenary to accept the truth, even at the hands of those who teach as though by Divine right.

Without personal pique, and, we trust, free from any unworthy motive or ambition, it seems to us only the dictate of common sense, and of a due regard for the welfare of the community and of the profession of our choice and love, that such pretense should be rebuked, and that teacher and student alike should apply themselves to the acquisition and demonstration of an ability to operate and prescribe for each particular presentation upon general principles, instead of the dictum of any man, no matter what his real or pretended abilities may be.

If we shall have contributed in any degree toward awakening the minds of practitioners, teachers, or students, to the true dignity and importance of our specialty, we will have accomplished the object of this brief paper.

PATENT VENDERS AND DENTAL SOCIETIES.

BY W. E. DRISCOLL, BEDFORD, INDIANA.

Believing your "common sense" article on "Reports of Societies," published some months ago, to be the embodiment of the sentiments of a long-suffering profession, we would like to see the good work of reform in our societies in this and other respects fairly inaugurated. As next in order, would it not be well to look into the system of "honorary (?) membership" of some of our societies,—especially the custom of conferring the title or privilege upon persons who are present to introduce or sell some patented process to the profession? Persons traveling about for such purpose are not always the most proper subjects for such distinction. But that they have secured such privilege very much as "jobs" are put through legislative assemblies, who will deny? As long as the title means anything, it will help on the sale of their patents, and they can afford a "good thing" to such as will engineer them in. Two or three of these *brass-clads* will need all the usual time of a session to explain their processes. Modest and worthy members who should derive the most benefit from attendance are crowded out, and will sometimes conclude such a society a humbug, and more in need of elevating than themselves.

The exhibition and explanations of new discoveries and inventions are among the most attractive and profitable features of society meetings, and may be fully secured without conferring a single honorary membership. By withholding such recommendation or indorsement, we are saved from becoming parties to the many deceptions practiced by persons who are more anxious about their pecuniary than professional standing. By conferring the title only on those who are an honor to the fraternity, they will be stimulated to make us returns that will reflect honor on all concerned.

GOLD FILLINGS.

BY JOHN FOUCHÉ, KNOXVILLE, TENN.

I ENTERED the profession of dental surgery thirty-three years ago, and since then have used gold in all of the forms and manners recommended by the various good operators in the country, and after a thorough test, as far as I am capable, will give you my present manner of filling teeth, which, to me, is incomparably the best.

I use gold foil in two forms only,—pellets and folded strips. Pellets in all cavities, except approximal cavities where the separation is slight, and the enamel is sound and solid all around the cavities: in these cavities I use folded strips of No. 4 soft foil, with hand pressure only; in all other cavities pellets and the mallet.

I do not suppose that much that I may say will be new to many, but some portion of my practice with pellets I have learned from no one, and, as far as individually concerned, it is original with me.

The way I prepare my pellets is this: I take a whole or half, and for very delicate cuts a fourth sheet, of No. 4 *soft foil*, and carefully folding in the two edges, twist them into a rope, so that a whole sheet rope will be about the tenth of an inch in diameter; the others in the same proportion. I am always careful to make the twist from me with the right hand, and then with a sharp penknife, with *its edge toward the hand*, I take the rope in the left hand, and put the end to be cut across the ball of the right thumb, drawing the blade from heel to point across the rope, and thus cut off the pellets. If the knife is sharp—and the gold which will adhere to its edge, after cutting a few pellets, is wiped off on a clean napkin—the cut will not condense the rope or flatten the pellets one particle; and now, having cut my pellets such lengths as desired, the next process is to anneal the pellets. This is done in the following manner: I have a square iron frame made of wire; from the center of one of the squares the wire is carried out and turned back so as to form a handle; the square of the frame is covered with fine, iron-wire gauze, and on this gauze I pour my pellets, and with a spirit-lamp heat them red hot; then pour them on a clean, smooth-ironed napkin, and they are ready for use. For the bottom undercuts and *starting-points* of cavities, I use the gold twenty-four hours after annealing, but for the exposed portion of the filling, I use the gold immediately after annealing. I do not use the lamp at the chair.

I have used hot gold for filling teeth, and have burned my fingers, the patient's lips, and drawn the temper of my instruments, and all that sort of thing; but gold prepared in the above manner is incomparably superior to any other way that I have used it. The pellets, twenty-four hours after annealing, will work like buckskin, and will be found sufficiently adhesive for the purposes above designated. I use some

sponge gold in the bases of cavities, and when slight moisture (from the breath) gets in, while filling, I use a pellet or two of sponge, as it will weld on when foil (hot from the lamp) will not. I usually carry my pellets to their places in the cavity with hand-pluggers, and condense slightly a layer over the cavity, being careful to condense toward the walls of the cavity, and keeping the gold higher around the walls than in the center; I then mallet over;—and so on, with each layer, until the cavity is filled. If properly put in, they are as solid as hammered gold, and will *receive* and *retain* as beautiful a finish as pure gold is susceptible of.

As to heavy foil, I have only a word to say, and that is, that by those who think, as I do, that it is necessary to pack the gold in *absolute contact* with the entire walls of the cavity, as well as to make a hard outside, heavy foils will only be used for *binders* and veneers.

CHLORIDE OF LIME AS AN AGENT FOR THE REMOVAL OF BROKEN INSTRUMENTS FROM THE TEETH BY OXIDATION.

BY E. F. HANKS, RAHWAY, N. J.

Now that the filling of the pulp cavity is an every-day occurrence, it behooves us to find some agent that can be relied on to act surely and uniformly in the removal of the points of delicate instruments liable to be broken in its excavation and preparation.

Having recently a case which resisted all my efforts in a mechanical direction, I turned my attention to some chemical means. Iodine I rejected on account of its liability to discolor. After experimenting with chloride of lime, and finding that it produced oxidation very rapidly, I tried it with the following success:

Mrs. C., after two years of suffering from the effects of a broken burr-drill in the pulp cavity of the central incisor, came to consult me in regard to it. While having her teeth attended to by Dr. ——, of New York, the pulp of this particular tooth was found to be diseased or dead. After removing the pulp, or part of it, he proceeded to drill out the canal preparatory to filling. A small portion of the pulp remaining, the drill struck it, and the patient giving a violent start caused the drill to break. He made three appointments, at which he endeavored without success to remove it, and then gave it up. The tooth became painful as soon as the drill broke, and continued so up to the time she came under my care, the gum being much swollen and of a dark color.

After the removal of an oxychloride of zinc and cotton filling, which the doctor had introduced, I enlarged the canal up to the end of the fragment. Laboring under the impression that it was the fine point of a nerve extractor or excavator, I thought I could soon dislodge it by

drilling around its end and moving it to and fro with a slender excavator. But all in vain; it was as firm as a rock. The tooth becoming very sore, I sent the patient home, making an appointment two days later.

In the mean time I turned the subject over in my mind, and devised an instrument something the shape of the trephine for the antrum, it being a hollow cylinder, one-sixteenth of an inch long, on the end of a small handle, with four teeth on the upper end like those of a saw, the opening passing out by the side of the handle.

I tried it, but the opening through the middle of the instrument not exactly covering the end of the fragment, two of its teeth were broken off. The tooth becoming sore, I dismissed her again after applying chloride of lime.

The next time she came I had my hollow drill in order again, and was more successful in covering the end of the fragment, owing to its having been oxidized and loosened by the action of the chloride of lime. A few turns of the instrument, and out it came,—the broken end of a stout burr-drill, one-eighth of an inch long.

I have since experimented as to the length of time required to completely oxidize a common pulp broach or excavator immersed in a solution of this material; I found that in four days it became so thin and brittle that it could be broken with as much ease as a scale of iron rust, which, in reality, it was reduced to. I do not pretend that I am the first to have used the agent for this purpose, but I have never heard of it in this connection.

A CURIOSITY.

BY THOS. C. STELLWAGEN, M.D., D.D.S.,

PROF. OF OP. DENTISTRY AND DENTAL PATHOLOGY IN THE PHILADELPHIA DENTAL COLLEGE.

October 12th, 1870.—I have just removed a large, white gutta-percha filling from the distal side of a left superior central incisor tooth. My patient informs me that it was inserted at San Francisco, Cal., by Dr. A. G. Frenaye, in May, 1859, and furthermore, that being a resident of Yokohama, Japan, he had not since had any dental operations performed.

The dentine under the filling was but slightly softened, yet at the margin, where the gum had decomposed, there was marked caries. The cavity extended almost into the pulp of the tooth, and from the general appearance, I think it had not any other material than this in it when filled. There were many cavities of decay and imperfect gold fillings in the mouth. A large portion of the gutta-percha, almost free from decomposition, has been deposited in the museum of the college, where it may be seen.

FILLING PULP CANALS.

BY W. E. DRISCOLL, BEDFORD, INDIANA.

We often meet with cases where the pulp cavity and canals are so large that poor patients cannot pay for any of the common modes of filling them. To those anxious to do the greatest good to the greatest number, this is a constantly recurring source of regret.

Viewing the matter in this light, two years ago I tried the following plan, and would have reported it sooner, but desired to test it thoroughly first, and, having done so, am prepared to recommend it to all who cannot afford what may *seem* a better operation for the fee they receive.

The canals being prepared and dried, then take a smooth steel broach with drawn temper, about half as large as the canal, and with a minute serration at the point, carry to the bottom of the canal a fine thread of floss-silk saturated with oxychloride of zinc, and long enough to about half fill the cavity if of ordinary depth. Withdraw the broach just far enough to get a short hold farther up on the thread, and in this way condense it gently. Then, on another broach, insert enough prepared cotton or flax to absorb the chloride. In the same way fill the rest of the canal and pulp cavity, and the cavity of decay, with gold or tin. To preserve the broaches, they should be wiped as quickly as possible and stood point down in olive oil.

HILL'S STOPPING IN SEPARATING THE TEETH.

BY H. L. AMBLER, D.D.S., M.D., CLEVELAND, OHIO.

In the Dental Cosmos for August I find an article entitled "Os-artificiel in a New Field." After carefully reading, I am prompted to write the following,—not with any spirit of fault-finding; still I believe, in such cases as are spoken of in the above communication, that we have in Hill's stopping a superior material, answering a better and more cleanly purpose, for holding the teeth apart when they are once separated. The method of using the stopping I learned of Dr. C. R. Butler, of this city, who has been practicing it for more than a year past; and, from my own experience, have found as yet nothing equal to it. For operating upon approximal cavities, when sufficient space has been obtained beforehand, by the use of wood or rubber, and desiring to keep the teeth from coming together until after the operation, I place napkins in the mouth to keep them dry; then fill the cavities and space between the teeth with Hill's stopping; in the anterior teeth it can be trimmed into such concave shape as to be scarcely noticed. Now, when it becomes cold, take a saw made from a watch-spring, and cut through it, thus leaving a slight space where a thread can be passed through for the sake of

cleanliness; also doing away with the objection of fastening two teeth together. This can be left in for a few days, until the soreness from wedging has subsided; then it will be found that operations can be made with comparative comfort. Even if one should not operate for some days more, the teeth have been left in a safe condition. This method is useful in young as well as more aged patients, and thus far I have found no difficulty on the part of the teeth resuming their normal position after the final operation. Where circumstances will permit, I would wholly or partially excavate the cavities before putting in the stopping; this will make the adaptation easy and complete, causing it to retain its place nicely. Thus we do away with wood, rubber, os-artificiel, etc. for these specific cases. Should it be desirable to use coffer dam, put it over these teeth the same as any other; then drive the shield and wedge, which should generally be done before removing the stopping, which is easily accomplished by using a warm instrument. I do not recommend this way of procedure in all cases—only those where good judgment dictates it as being proper and best.

A DENTAL MUTUAL ASSURANCE SOCIETY.

BY W. IRVING THAYER, D.D.S., CHELSEA, MASS.

THE above caption seems to embrace a plan which, if rightly formed and carried out, will be the means of greatly benefiting the widow, children, or other members of the family of any brother in our profession who may become a member of such a society.

The attractive features of a plan devised something like the following, would seem to be in the fact that no great expense need attend its practical workings, as no selfish element appears in it.

All the benefits of a first-class life insurance are secured without the cost of running expensive machinery. No extravagant rents for a place of business; no magnificent salaries for officers; no liberal commissions paid to soliciting agents; no dividends on stock, but one *pure, mutual,* and unselfish combination for each other's good.

A basis of operation something like the following, would insure its success almost beyond a doubt: any one could become a member by the payment of ten dollars to the board of trustees.

Upon the death of any member, each surviving member should be required to pay to the trustees, the sum of two dollars and twenty-five cents.

The two dollars from each and every surviving member to be paid to the person or persons for whose benefit the life of said deceased brother was assured.

The sum of twenty-five cents to be appropriated for stationery, postage, and incidental expenses.

The ten dollars paid as entering fee, to be forfeited to the association after the expiration of six months' notice, by mail or otherwise, when any member shall refuse to respond to the assessment of two dollars and twenty-five cents from the directors upon the death of any brother; and the person so refusing shall, after that date, cease to be a member, and shall not be entitled to receive any benefits from said association.

The above will serve to show that when such a plan is put in a perfect form, of which this is only an epitome, it will be capable of conferring a great blessing on those we love, and the payment of the two dollars and twenty-five cents prove an act of sacred kindness, which will be doubly appreciated by the participators of the benefit, and deprived of the appearance of charity.

DENTAL SUGGESTIONS.

BY JOHN D. WINGATE, D.D.S., BELLEFONTE, PA.

Drying Cavities for Plugging.—Some years ago bibulous paper was strongly recommended for drying cavities. It takes up moisture very readily, but when moist, the fibres separate so easily that, in cavities difficult of access, it is frequently not easily removed. Raw cotton, once the only drier, does not readily absorb water, and therefore has, to a great extent, been discarded. Spunk is much used, but, on account of the awkward form pellets take, it is rather inconvenient. Half-worn linen, clean, smoothly ironed, and free from starch, absorbs moisture as readily and will dry as effectually as spunk; and, properly cut, is the most convenient and easily managed of any material we have used. It may be cut into strips about one and one-fourth inches in length by one-eighth to one-half an inch in width; rolled rope fashion, thrust into the cavity endwise, and turned sidewise till the whole strip has been through. Cut into larger pieces, it answers to fold and lay between the cheek and gums.

To facilitate cutting, we cut into strips of about one and one-fourth inches wide, then lay a number on top of one another, and then cut across with shears the width the pellets are intended to be.

Hemorrhage.—During the last twelve years we had a goodly number of patients of hemorrhagic diathesis; and, in every case except one, controlled the bleeding with small pellets of cotton, held in the tweezers, dipped in creasote, thrust into the bottom of the cavity so as to come into contact with the bleeding artery. The creasote albuminizes the blood, making an insoluble plug over the bleeding place.

To prevent the lifting of this plug by the force of the discharge of blood, it is well to force in, on top of the cotton and creasote, a few pellets of fine sponge, rolled tightly between the thumb and fingers. The

exception was one in whom, after checking in the usual way, the blood commenced oozing out of the gums, around the cavity. Took a wax impression, run a plaster model, and made on this a heavy gutta-percha compress, attaching it with clasps to the adjoining teeth. This had the desired effect.

New upper and lower sets of teeth sometimes slip about a little too easily. By roughening the grinding surfaces by the use of corundum wheels, this may be lessened.

WEDGING.

BY T. HALEY, BIDDEFORD, ME.

As there has been considerable said in behalf of wedging for filling approximal cavities, it may be well to look on the other side a little and consider the dangers incident thereto. I will give a case in illustration.

A young lady—not of "a scrofulous diathesis"—called on me a few days ago for advice in regard to her superior incisors. On examination, I found the right lateral presenting the same appearance as in death of the pulp. The tooth was filled in both the mesial and distal sides; the former with gold, the latter with oxychloride of zinc. The tooth was loose from periostitis. I opened into the pulp cavity through the depression in the palatal surface; found the tomb of the pulp and its decomposed contents; enlarged and cleansed to the apicial foramen; treated with creasote, and in about ten days, the tooth having become firm in its socket and there being no soreness, bleached, and proceeded to fill. Also, removed bone filling in distal surface, and filled that with gold. I then filled cavity in mesial surface of left lateral, after removing a gold plug, discolored and partly gone. The history of the case, according to the patient, is this:

Last autumn she went to Dr. B., of the city of B——, and had these teeth operated upon. Dr. B. "wedged," although the patient protested that he would spoil her teeth. He persisted, however, and used the gradual process. The teeth were painful up to the time of calling on me. This tooth turned dark; he told her they often did so. He filled them as I found them. He might as well have covered a volcano. I managed to operate with little pain to patient. Used no wedges, and yet, when completed, the teeth were no more separated than before.

I have "wedged" *some.* Once in awhile a patient whom I have "wedged" comes for further work, and almost the first question when in the chair, born of a painful experience, is, "Have you got to put in a wedge?"

I use the wedge but rarely, and condemn its indiscriminate use; in

careless hands it is liable to cause mischief. With the thinnest separating files and chisels, all can be accomplished. We have been seeking for methods to give the best result; let our next work be to get as good results with less harsh measures.

OS-ARTIFICIEL IN VULCANITE WORK.

BY HENRY BERHARD, D.D.S., NEW YORK.

I NOTICED in the DENTAL COSMOS for August an article relating to a *new field for os-artificiel*, and having tried it for a new purpose, would beg leave to mention that, for preventing the rubber from oozing through the crevices of the joined blocks in vulcanite work, it is far superior to anything heretofore suggested; and I am delighted with its result.

Prior to the piece being placed in the flask, the osteoplastic should be pressed on the labial surface of the joined blocks, allowing it to reach as far as the approximal surface of the teeth joined. Use quick-setting osteoplastic.

EXTEMPORIZED DRILL CHUCK.

BY M. MORGAN, D.D.S., SPRINGFIELD, MASS.

A CHUCK for any small-sized drill (as the excavator drill) may be extemporized by simply winding the shaft of the drill with a narrow strip of "coffer dam rubber," to a size just sufficient to slide into the spindle socket of the lathe, when, if wound sufficiently tight, it will immediately unroll and bind, so as to hold the drill very firmly.

This will be found very convenient in the repair of rubber-work, or on any occasion where a small drill is required.

MISCELLANY.

ABSTRACTS AND SELECTIONS.

BY. J. W. WHITE.

CANADA JOURNAL OF DENTAL SCIENCE.

Dr. Beers gives an account of the "Explosion of a Vulcanizer" in the office of Mr. C. Brewster. The vulcanizer was a two-flask Whitney, and had been in use about seven years.

Mr. Brewster made a narrow escape from instant death. The laboratory gave evidence in every quarter of the violence of the explosion. Dr. Beers says:

"The cause is solely attributed to the high pressure of steam,

as Mr. B.'s assistant had about five minutes previously turned on an unusually large, full flame of gas The explosion must have occurred at about 430°. No blame is attached to deterioration in the boiler, as it and the brass top remain almost perfect, excepting a few cracks and dinges. Is it not possible that the *too rapid* generation of steam had considerable to do with the explosion, and that the copper boiler may have deteriorated so much as to unfit it for safe use, though even now it looks very safe to the eye? A proof that the fusible safety-plug is not always reliable as a test of the pressure of steam, is that it still remains in the brass top of this exploded vulcanizer.

"This adds one more to the warnings to use diligent care with the vulcanizer, and never comfort one's self with the assurance that because ours has never blown out the fusible plug, it never can blow up till it does, and that, because the process of vulcanizing is simple, it may not be also considered dangerous. After a few more have had their heads blown off, we shall begin generally to realize the little terrors we are daily using in our laboratories, in the vicinity of which we, our assistants, and often our wives and families, may be calmly sitting"

British Journal of Dental Science.

In a paper read before the Medical Society of London, by W. D. Napier, M.R.C.S., "On a New Method of Filling Teeth," the author says:

"To the use of metal in any form I take objection, principally for the following reason:

"The extreme sensibility evinced by decayed teeth to the action of both heat and cold is a sufficient evidence that the substance introduced should contain as much as possible the properties of a non-conductor. The incompetence of *metal* to attain this object I need not waste your time pointing out, and it was with a view to obtaining an efficient substitute that I have devoted myself for some time past to a series of experiments, the result of which I now bring before you.

"The materials that I have used (as I believe with perfect success) are hippopotamus ivory, mother-of-pearl, and india-rubber vulcanized to the consistence of ebony.

"When the cavities are not very large, and can be made cylindrical by the cutters we are in the habit of using, I find that ivory or pearl turned to gauges corresponding with the cutters, will form perfectly-fitting plugs.

"When large and irregular I prefer to use vulcanite, insuring a perfect adaptation by taking a cast of the cavity in some plastic material, from which a plaster model is made, into which soft india-rubber is packed, and subsequently vulcanized. This also forms a closely-fitting plug, which may be placed in the tooth with or without cement, as the case may indicate.

"The advantages I would point out from this mode of treatment as briefly as possible are these:

"That the stoppings now introduced to notice are fully as lasting as those hitherto used, and yet are no more conducive to the conduction of heat and cold than the tooth in its natural condition; and next, the comparative ease to both operator and patient with which they are applied, owing to the absence of pressure in their adaptation.

"That there are cases in which the system under notice would not apply I do not doubt, where gold foil or some very plastic cement must still be used; but if I may be guided by my own experience, they are exceptional, whereas the great majority would be inestimably benefited by an improvement on the means now in general use, and almost as generally, I believe, considered defective, but irremediable."

Missouri Dental Journal.

Dr. Chase contributes an article on "Cylinder Fillings," which we copy:

"Country practitioners have large demands upon them for *cheap* fillings; they respond by using amalgam, when they ought to use tin foil.

"As there are thousands of dentists who never used a cylinder, I wish to say a few words about cylinder fillings, especially for the benefit of young practitioners and students.

"Let me make a tin cylinder. I take a sheet of tin foil, cut it in two, fold it several times the long way, until a ribbon is formed a quarter of an inch wide. Wind this around a smooth, square-sided nerve broach, until the ribbon is half used up. I tear or cut off the ribbon. Remove the tin foil from the broach carefully, and I have a cylinder. The layers of foil are in close adaptation, excepting the small hole through the center, made by the broach.

"These cylinders can be made as long or short as one pleases, and of such a diameter as one finds most convenient for the particular case. It will be found that a large amount of foil is present in a small compass, in the cylinder condition. Yet it is in a compressible shape, if force is exerted upon it laterally and not endwise. The former is always the mode in which cylinders are condensed in a cavity.

"From six to twenty cylinders should be used in filling a cavity. Their size should vary according to that of the latter. They should be long enough to reach from the bottom of the cavity to the top, and project beyond the latter about one-fourth of their length, or thereabouts, depending on the case. They should project so as to give an overflowing cavity, the excess being malleted down as much as desirable, after the foil is *all* put in.

"If, however, a cavity is so located that we cannot have as free access to every part of the surface of its plug, after the cylinders are *all* placed, as before, then it is better to secure the feet of the cylinders so that they will not move, after having placed two or three in position, and then condense their ends.

"If one becomes displaced after being condensed, it should be removed and discarded, for the probabilities are that it would not *fit* as before if put back.

"False cylinders are sometimes made by winding a leaf of foil into rope, thus: take a half sheet of tin foil, fold it loosely, and twist it into rope, making the rope tight and pretty solid. Now, cut it to such lengths as you desire, the same as for true cylinders.

"These false cylinders are more compressible than the true ones, but do not contain as much metal in the same compass. They are, however, very useful, and I seldom make a cylinder plug without making use of one or more of them. If placed in the cavity *first* they are not so likely to move on the introduction of others as the more solid ones.

"Cylinders make the best possible foundation for approximal plugs near the gum.

"Let me now plug the most simple cavity with tin cylinders. It is a good-sized cavity in the grinding surface of the first right under molar.

"Take up with pliers a false cylinder having nearly as great a diameter as the transverse diameter of the cavity, and a length one-fourth greater than the depth of the cavity. Place the latter with one end resting on the bottom of the cavity, and the other end projecting beyond its margin. With a broad flat instrument, moderately compress the cylinder laterally its whole length; place another cylinder by the side of this, having a diameter somewhat greater than the space into which it is to be forced. With a long foot instrument, compress both of these cylinders and mallet them well home. Continue this process, using *true* cylinders instead of false ones, or mixing them to suit your convenience, until you find it inconvenient to place the end of the cylinder on the floor of the cavity and condense it. When this stage is reached, take a pellet and mallet down to the floor, so as to make the depth of the remaining portion of the cavity less. Fill it about half-way up. Now use shorter and smaller cylinders until the cavity is full. The last one which is placed in contact with the dentos should fit loosely, and should be a true cylinder. With a sharp instrument force an opening between the last cylinder and the former ones, and *not* between the last cylinder and the dentos. This opening is to be filled with a false cylinder or a pellet, and well malleted.

"Go over the whole surface, now, with the plugger and mallet. A larger condensing plugger at first, and then a smaller one. Cut down the surface with burrs or scrapers, very nearly to the line of rest. Mallet again with smooth or shallow serrated condensers, and afterward burr and scrape entirely down to the line of rest; polish with pumice-stone and chalk. With slight modifications this method will fill any other cavity with tin cylinders.

"In the use of gold cylinders I *always* fill the opening with *adhesive pellets*. I use *unannealed* gold for cylinders, though sometimes an *adhesive* gold cylinder is employed for a special purpose, viz., to form a bed for adhesive pellets."

Dr. Mowbray, writing on "Applications to Sensitive Dentine," says:

"A substance I have been using with great success is the new hypnotic, chloral hydrate. After suitably preparing a tooth, a strong solution of chloral may be injected, or the chloral itself may be lightly compressed into every part of the cavity, which usually contains sufficient moisture to dissolve it; if it does not immediately soften, moisten it with a drop of water.

"Thirty grains of chloral, dissolved in forty of water, make one fluidrachm of the saturated solution.*

"When I use solid chloral, I cover the orifice of the cavity with beeswax and let the medicament remain for five minutes, when relief may be expected.

"Thus far I have not used it in a single case without benefit. In

---

* Lancet.—Braithwaite.

many cases the relief is surprising, a complete absence of sensibility being effected.

"It must be mentioned in regard to the use of this, as of all other dental medicines, thoroughness in their application is of the utmost importance and often imperative to attain the desired result.

"When a cavity approaches the pulp, and is *very* sensitive, patients usually mention, 'the tooth feels warm, but is not painful;' the effect is probably somewhat similar to that of chloroform, when placed in a carious tooth, but far more efficacious in cases of sensitive dentos.

"The generally accepted view of the action of chloral, when given internally, is, that it is decomposed in the blood, and chloroform is set free; but its effect is different from the administration of chloroform by inhalation, being more prolonged, in consequence of the slow evolution of chloroform.

"This peculiarity of the hydrate places it in a position between narcotics and anæsthetics. Its somniferous principle has readily classed it with the hypnotics. The dividing line between anæsthetics and narcotics has hitherto been sufficiently clear, but this drug calls attention to a new position, in some degree like both, but distinct from each.

"I would state, in conclusion, that thus far I have observed no ill effects upon the pulps of teeth treated in the manner described."

PROCEEDINGS OF DENTAL SOCIETIES.

AMERICAN DENTAL CONVENTION.

The sixteenth annual meeting of the American Dental Convention was convened in Room No. 24, Cooper Institute, New York, September 20th, 1870, at 11 A.M.

The President, Dr. J. G. Ambler, on taking the chair, congratulated the convention upon its prolonged life, and enjoined the remembrance of the social excellencies of such men as Harris, Hayden, Allen, Townsend, Blakesley and others, who have done so much by example and effort to elevate the profession. He said: "We meet to-day in the effort to do what they honestly tried to do,—benefit each other and elevate our profession: to compare notes, to dissect theories, to explode old and create new ones, to confirm, establish, and strengthen each other in the truth. We meet to renew old and form new acquaintances, contribute our mite of knowledge to the general stock and secure the contributions of others."

Fifty-three persons signed their names in the book of records as provided in the constitution, paid an assessment of one dollar, and became members of the convention.

The President appointed Drs. Hurd, Straw, and Atkinson, as a committee to arrange the order of business and subjects for discussion.

The Faculty of the New York College extended to the convention the use of their rooms in which to hold its meetings while in session. The thanks of the convention were tendered to the Faculty.

A resolution was passed inviting all practicing dentists and physicians to attend its meetings while in session. While the committee were preparing the order of business, Drs. Tefft and Alexander stated that they and some of their friends had been swindled by pretended agents of the Rubber Company; thought it well not to pay attention to demands for money.

On motion, it was decided to attend a clinic given by Dr. Atkinson, at S. S. White's depot, for the purpose of demonstrating the use of the pneumatic engine in finishing gold fillings.

The operation of filling a large buccal cavity in a first superior molar was witnessed, and the manner in which the pneumatic engine was used in finishing the filling, the speed with which the machine was run, and the shortness of time in which the finishing of the filling was done, was a marvel.

Evening Session.

Committee on Order of Business and Discussion reported:

Order of Business.

1st. Calling to order and remarks by President.
2d. Reading of the minutes.
3d. Admission of members.
4th. Report of officers and committees.
5th. Reading of essays.
6th. Discussions of subjects in the order presented.
7th. Election of officers.
8th. Retiring President's address.
9th. Introduction of officers elect.
10th. Miscellaneous business.

Subjects for Discussion.

1st Dental education.
2d. The best protection for exposed pulp.
3d. Inflammatory diseases of the gums and periosteum, producing waste of the sockets and loosening of the teeth; cause and treatment.
4th. Contour fillings.
5th. Artificial dentures.
6th. Miscellaneous subjects.

Dr. Atkinson, by request, read a paper on "Mercurius Vivus," written by H. L. Ambler, M.D., of Cleveland, Ohio.

Dr. Atkinson criticised Professor Huxley's views, controverting the eminent physiologist's assertion that the peculiar color of venous blood is due to the presence of carbonic acid.

SECOND DAY.—*Morning Session.*

Dr. Atkinson read a paper on "Dental Education," and completed it by extempore remarks, in which he said: "The function of teaching implies the possibility of attainment and communication. Experience is said to keep a dear school. What is experience? It consists of our own bodily and mental career, and the like career of others with whom we come in contact. Experiences must be remembered, recollected, or recorded, to be of any use. Similarity of experiences in bodily and mental conditions wonderfully facilitate understandings of the pronouncements of mental conceptions. All things differ but in degrees,—con- and dis-crete. The order of succession of events being known in any department of nature, the probabilities, nay, possibilities, become calculable. It is the possibility, to the prevision of coming events, that constitutes authority. Educators should possess this capability of prevision to enable them to correctly judge of the character of mind and dispositions of the pupil, so as to adopt the best modes of drawing out the latent energies of mind and body, which must be recognized to instruct and educate him to successfully encounter the issues of life. Teach the teachers, for they need to be taught the first basic principles of science and philosophy quite as much as their pupils need teaching in detail. As soon as any body, being, or mental work becomes the object of study, we are forced to consider it in respects,—first, internally, as a whole; secondly, as a system of parts; or, in other words, synthetically and analytically. The patterns of body, being, and understanding must be both general and specific, or special. Therefore the last analysis of the question, whence comes the patterns, and the reply from above, to be satisfactory to the individual, must be attained through intuition. The organs of body and mind are prophetic and explanatory of systems; the senses are prophetic and explanatory of sciences; the summation of the senses (reason) is prophetic of, and explanatory to, conical relations, physical and sentient.

Dr. J. S. Latimer made some remarks on life insurance policies, and proposed that a sum be set apart, the interest of which shall be offered as a premium for the best dental school,—the broadest and most liberal.

Dr. O. A. Jarvis said that dental societies are as good a means as any other for educating dentists, but the trouble is the want of scholars. The great question now is, How can we reach the mass of the profession and bring them into the dental societies? There are now five hundred practicing dentists in this city trying to make a living, some of whom are ignorant of the very first principles of dentistry. We must find some means to protect our profession from them: each one is responsible for their ignorance.

Dr. S. Marshall, of Delaware, admitted that we were bad enough, and

weak enough, and ignorant enough, but we need encouraging, not scolding.

On motion, it was decided to attend the fair of the American Institute, at three o'clock, in accordance with an invitation extended by the members of New York City and Brooklyn.

Evening Session.

Subject for discussion: "The Best Protection for Exposed Pulps."

Dr. O. A. Jarvis recommended a thin longitudinal section of softened quill; thought oxychloride of zinc would always produce irritation. When oxychloride is used as a cap under gold, it should be sufficient in quantity to be strong; would then interpose bibulous paper, wet with creasote. If the fibrils are broken by the displacement of inflammation, he cannot treat the pulps successfully.

Dr. Fuller, of Peekskill, N. Y., had capped with shaving of cork, wet in creasote, and covered with oxychloride of zinc.

Dr. C. E. Latimer applies creasote; absorbs the excess of creasote; applies the oxychloride of zinc; then absorbs excess of chloride as cap, which, when set, he adds more filling to the cavity. The pain is not great. If the pulp has been inflamed, he treats with creasote and laudanum, covered with cotton, and varnishes, dressing several times. Counter-irritants are beneficial when applied to the gums.

Dr. C. Weeks had used the oxychloride for some years, with general success; had saved some pulps which had been wounded; fails in perhaps one-third of the cases tried.

Dr. Searle, of Massachusetts, had tried all the methods recommended, but still has failures.

Dr. Jarvis said the exposed and wounded pulps receded from the orifice; and he would ask Dr. C. E. Latimer whether he would fill the space, so formed, with oxychloride or not?

Dr. Latimer replied that he would fill to the pulp, but he does not find such a space except when the pulp has suppurated.

The subject of "Contour Fillings" was taken up.

Dr. Marshall objects to contour fillings, because they are more easily dislodged and because the display of gold is objectionable. He would prefer a concave to a convex surface.

Dr. Weeks thought it better to restore the contour. Gold displayed where benefit was received, was far better than where it was worn for mere show.

Dr. J. C. Rich, of New York, claimed that generally those who restore the contour defeat the object of filling. He believed contour fillings less likely to preserve the teeth than those less likely to be partially displaced.

Dr. F. H. Clark disliked to see the gold show. He thought the teeth would generally be best preserved by flat fillings.

Dr. Hurd had reason to think well of contour fillings. One such had been the means of bringing him fifteen hundred dollars in a single year. The fact that so many liked the appearance of the contour fillings named, proves that the taste of this community does not altogether object to seeing gold in the mouth.

Dr. J. Covell, of New York, thought that for beauty and utility the contour filling was far superior to the old style of operations. The restoration of the voice, mastication, and the beauty of form, together with the prevention of the unpleasant consequences of the wedging of food against the gums, are enough to commend to him the contour fillings.

Dr. C. E. Latimer thought the divine Architect knew best about the matter of contour, and we cannot do better than to accept the hint given us.

He is himself a sufferer from the V-shaped separation between teeth, and could testify to its uncomfortableness.

Third Day.—*Morning Session.*

Subject, "Artificial Dentures."

Dr. Steinberg, of New York, said he had an improvement for getting up metal plates without any dies. He exhibited a plate made by his method. When perfected the profession should have the benefit of it.

Dr. Preterre was in favor of aluminium. He also liked Brockway's improved collodion for cheap work.

Dr. Crowell said Bean's patent failed because the teeth were attached with base metal; and Lawrence's patent fails because the teeth crack.

Dr. Weeks had used Weston's metal somewhat for temporary sets; gets good fits; prefers pure block tin for full lower sets; thinks the Weston alloy may be affected by the fluids of the mouth.

The following officers were elected:

President.—J. G. Ambler, New York.

Vice-President.—J. S. Latimer, New York.

Recording Secretary and Treasurer.—J. H. Smith, New Haven.

Corresponding Secretary.—W. B. Hurd, Williamsburg, L. I.

Under the head of miscellaneous business, Dr. Rich remarked that many years ago, before the days of mallets, he devised a handle for hand-pluggers, made by punching holes through disks of colored sole-leather, which are soaked, and then forced upon the wire handle and cemented with thick glue; after drying, the handles are filed or turned into shape.

On motion, the officers were constituted the Executive Committee for arranging for next meeting, etc.

On motion, it was decided that the Executive Committee make provision for daily clinics at the next meeting.

On motion, adjourned to second Wednesday in August, 1871, at Saratoga.

J. H. Smith, *Recording Secretary.*

MAINE DENTAL SOCIETY.

The fifth annual session of the Maine Dental Society was held at Biddeford, Me., Aug. 16th and 17th, 1870. A large number of members were in attendance. Dr. Haley, President, in the chair.

The following officers were elected for the ensuing year:

President.—Thos. Fillebrown, D.M.D., Lewiston.

Vice-President.—Dr. I. Snell, Augusta.

Recording and Corresponding Secretary.—E. J. Roberts, D.D.S., Vassalboro'.

Treasurer.—Dr. W. R. Johnson, Portland.

Chairman of the Executive Committee.—E. Bacon, M.D., Portland.

Drs. A. H. Chamberlain, of Augusta; McDavid, of Waldoboro'; Haskell, of Bridgeton; and Packard, of Portland, were elected active members.

Dr. Fisher, of St. Louis, was elected a corresponding member.

Profs. Keep and Hitchcock, of Harvard Dental College, Boston, were elected honorary members.

The retiring President, Dr. Haley, read an able paper upon "Dental Professional Ethics."

Prof. Keep addressed the society briefly upon gutta-percha, and at some length upon the preparation and use of oxychloride of zinc, after which an interesting discussion ensued on the preservation of *teeth pulps* by capping with oxychloride of zinc.

The Committee on the Microscope made a favorable report, and introduced Prof. Hitchcock, who had with him an excellent instrument, and delivered a lecture upon a number of specimens which he exhibited, consisting of sections of the teeth of man and animals, also of blood corpuscles, section of lung, trichina, etc.

It was voted that a first-class microscope should be purchased for the society.

A patient exhibiting necrosis of the alveolar process of the superior maxilla, and some difficult cases in regulating teeth, etc., gave interest to the meeting.

Adjourned to meet at Brunswick for the next semi-annual meeting.

E. J. Roberts, D.D.S., *Cor. and Rec. Secretary.*

WASHINGTON DENTAL SOCIETY.

At the regular meeting in May of the Washington Dental Society, the following paper was submitted by Dr. R. F. Hunt, and ordered for publication:

The Dental Society of the City of Washington make this appeal to the members of the medical profession at large, on the subject of the administration of tonics of an acid character, and urge upon them the adoption of greater precautionary measures to avoid the serious injury to the teeth so often resulting from the action of the acid on the phosphate of lime, which enters so largely into the composition of the teeth. The usual plan of taking the acid medicine through a quill or glass tube does not accomplish the desired effect, because it is impossible, even with the greatest care, to prevent a portion of the acid from coming in contact with the teeth; and even if this could be done, after the acid is swallowed the intimate relation between the stomach and the mouth is such that the teeth must be more or less affected by the character of the contents of the stomach.

Under these circumstances and in view of these facts, it is advanced, advocated and urged that the only safety lies in the use as a mouth-wash of some antacid, such as lime-water, or a solution of bicarbonate of soda, both immediately before, and frequently after, the taking of tonics into the composition of which any acid enters.

The *rationale* of thus presenting constantly in the mouth a free alkaline substance on which the acid must expend its power, and consequently be prevented from attacking the teeth, is evident.

It is, therefore, earnestly urged upon physicians generally that, when they find it necessary to prescribe acid tonics, they enjoin upon their patients, in addition to the present ordinary precautions, to use freely as a mouth-wash some such antacid as above mentioned, bearing in mind always that it is far better for the teeth that the fluids of the mouth should be of an alkaline than of an acid type.

J. Curtiss Smith, *Secretary.*

GEORGIA STATE DENTAL SOCIETY.

The second annual meeting of the Georgia State Dental Society was held in Atlanta, commencing July 28, 1870, and continued in session three days. The profession was well represented, and all seemed alive to the importance of elevating the standard of dentistry in the State.

Quite a number of able papers were read, among which was one by Dr. E. Parsons, of Savannah, on "Dental Physiology and Therapeutics;" and one by Dr. J. P. H. Brown, of Augusta, on "Inflammation of the Gums."

The Committee on Dental Education, appointed at a previous meeting, presented their report through their chairman, Dr. Brown. This paper considered at length many of the defects in dental education.

Dr. W. H. Burr, of Madison, offered the following resolutions, which were approved:

Resolved, That the Georgia State Dental Society instruct its delegates to the American Dental Association and to the Southern States Dental Association, to urge their respective dental organizations to use their influence to have our dental colleges subject all students to an examination in the primary studies of an English education before they can matriculate.

Resolved, further, That this society cannot approve of dental colleges receiving students without their giving satisfactory evidence of having served two years of pupilage with some respectable practitioner.

A committee was appointed to take measures toward securing a protective law requiring all dentists in the State to have a diploma, or a certificate of qualification from the Examining Board of the society.

OFFICERS.

President.—F. Y. Clark, Savannah.

1*st Vice-President.*—E. M. Allen, Marietta.

2*d Vice-President.*—H. A. Lowrance, Athens.

Corresponding Secretary.—J. P. H. Brown, Augusta.

Recording Secretary.—A. C. Ford, Atlanta.

Treasurer.—T. J. Jones, Sparta.

The next meeting will be held in Augusta, in April, 1871.

H.

MERRIMACK VALLEY DENTAL ASSOCIATION.

THE annual meeting of the Merrimack Valley Dental Association will be held in Congress Hall, Congress Block, Portsmouth, N. H., on Thursday and Friday, November 3d and 4th, commencing at 10 o'clock A.M., on Thursday.

The essayists are Dr. I. A. Salmon, of Boston,—subject, "Orthodontia;" Dr. I. J. Wetherbee, of Boston,—subject, "Filling of Difficult Cavities."

Volunteer essays may be expected from other members.

The subjects for discussion are: "Preservation of Deciduous Teeth," "Anæsthetics," "Mechanical Dentistry."

Clinical instruction will be given during the session by Dr. Stevens, of Portsmouth; Dr. Cummings, of Concord; and Dr. Shepard, of Boston.

All respectable members of the profession are invited to be present and unite with the association.

A. M. DUDLEY, *Rec. Secretary.*

CLINICAL REPORTS.

CLINIC OF DR. J. E. GARRETSON, UNIVERSITY OF PENNSYLVANIA.

REPORTED BY DE FOREST WILLARD, M.D.

EPULIS.

I EXHIBIT to the class this young man, who has, as I want all distinctly to see, a fleshy growth springing from the gum between two of his teeth; this growth falling into and filling a very large cavity in the side of one of them,—the first molar. I want you to look at this little tumor closely, because, insignificant as it is, it can furnish us with a text, the study of which may, on future occasions, prove of very great service to all here assembled.

Let me strengthen the force of the text by saying that, for the cure of just such a tumor as the one before us, I have seen a patient maimed in appearance and comfort for life, through a resection of the jaw performed for its cure; while I will show you that this one, the analogue, will be cured without being even touched, except as such touching may concern the extracting of a tooth.

The study, not of epulis but of the epulides, is one which I much desire to be able to make very plain to you, for, if you fail to comprehend the subject clinically, I am pretty certain you will not get a sufficiently clear comprehension of it from the books—at least for practical purposes.

Let us begin at the beginning. What is an epulis? There is no special disease which can be so called with a distinctive meaning. The derivation of this word "epulis" is from ἐπι, upon, and οὐλον, the gum, and thus signifies a something or anything upon the gum. What would the class think, should I show you a mass of tartar encircling a tooth and resting upon the gum, and call this mass an epulis? Yet, for all, it would be epulic, and I would have the same right to call it epulis as has the most learned writer who gives this name to any other condition of the gums. The term is at fault—it is inadequate in expression used as a noun, and must ever remain so, because from the gums and from the alveoli of the teeth grow tumors of various significations; so various indeed, that while some are so malignant as to defy every remedy brought to bear upon them, others, as in the case before us, are so simple and benign that, as I have said, the extracting of a tooth, or, indeed, the simple obliteration of a carious cavity, will be all-sufficient for the cure.

If you have read much on this subject, you will necessarily have been struck with the fact that the most opposite conditions bear the common name; that authors dispute in every volume the benignity or malignancy of such growths; and like hundreds of others, you have perhaps turned from the subject feeling that, with all your efforts, you have failed to understand just what epulis is.

From the gums and from the alveoli of the teeth we have, as I have said, tumors of various signification; for example, some that are erectile in character,—others are the fibroid, the fibro-recurring, the semi-cartilaginous, the encephaloid, the pulp-fungoid, etc. Any or all of these growths are indiscriminately described by the common term epulis. Take as an example Mr. Fergusson's description: "Epulis," says Mr. F., "is a disease which begins as a small spot, either on the outer or inner side of the gums." Again, in another portion of his writings he says: "Epulis consists of a swelling of solid bone, the hard part of the bone being primarily affected." Still again: "Epulis is an osseous cyst, containing a glairy or a serous fluid."

Mr. Paget, on the contrary, quite ignores the existence of epulis. When you return to your homes read his history of the myeloid diseases. Now, will I seem to use a paradox if I say that Mr. Fergusson is right in calling these most opposite conditions, as described by him, "epulis?" He has only in this case failed in his usual happy way of "putting things." So also the myeloid tumors, instanced by Mr. Paget as being mistaken for the epulides, being upon the gums ἐπι οὐλον, must necessarily have been epulides, and those who disagreed with Mr. Paget, in calling them by such names, were right,—right in one sense, yet, also, was Mr. Paget right. The one class called them epulic, because they were situated upon the gums, and it was their nomenclature thus to call all tumors so situated; the other class designated the growths pathologically. Now let us see how easy it is to reconcile these different nomenclatures of one and the same disease. I have already indicated that the word epulis could not, from its very derivation, apply as a noun-substantive; it has no other than an adjectival or anatomical application, and when so used, it is a remarkably expressive word.

Suppose, then, we discard the term as a noun,—as a word having any pathological signification, and apply it alone in accordance with its anatomical derivation.

Take now the tumors of Mr. Paget,—they were marrow-like in structure, and were therefore myeloid growths; but their situation was upon the gums,—they were therefore epulic; we convert now our noun into an adjective, and fully describe these tumors by calling them epulo-myeloid,—does not this reconcile the differences, and is not the compound word solidly expressive? An epulo-myeloid growth is a tumor situated upon the gums, marrow-like in its pathological character,—thus is expressed at once, and happily, as it seems to me, both location and character.

If now, gentlemen, you are prepared to accept of the change proposed, you can never again possibly find yourself confused by any writer or any *clinician* on this subject; he may call such tumors how or what he pleases, but you will comprehend him. You are, at least, to understand me that I shall never have an epulis to show you; but, without doubt,

I shall have the opportunity of treating before you numerous instances of epulo-fibroid, epulo-erectile, epulo-cartilaginous, epulo-carcinomatous, and other tumors of the epulides. Epulis (ἐπι οὐλον) is with us always, remember, an adjective and not a noun,—it describes the location of a disease, not its character.

I return now to the case before us. While superficially viewed, this tumor looks as if growing from the socket of the molar tooth, yet I have found that, by carefully pressing it away, this is not the case, but that, indeed, it is nothing but a strangulated mass of gum tissue. Let me explain this. Here in my hand is the model of a molar tooth; it has, as you see, a great cavity excavated in its side. Now, I encircle the base of the crown with this piece of lint, which lint is to represent the gum, and does represent it exactly in its relation to the tooth,—look now, and you will see that the base of the cavity is concealed from sight by the lint,—the cavity runs below the circle of the lint. Suppose now that I should wet this lint, then, swelling, would not the portion that lies over the cavity fall into it?

This is exactly the history of the little tumor before us. The cavity in this tooth runs below the margin of the gum,—this gum tissue has become congested,—wet, if you please—and it has swelled up over and into the cavity, which swelling into the cavity, together with the pressure between it and the adjoining tooth, has strangulated the gum; hence its livid aspect; the strangulation in turn has added a second source of irritation, thus explaining through the provoked ulitis the congested look of surrounding parts.

Understanding now the explanation I have given you, the treatment of this case resolves itself into such simplicity that it is as though one might say, "I have a string around my finger which is so tight that it cuts off the circulation." You would cut the string, would you not? Just so you would pull out this tooth, or you would obliterate the strangulating cavity. If you would determine on doing the latter, you would first, with a sharp bistoury, cut the growth from the cavity, and then, saturating a piece of cotton with a solution of gum-sandarac, you would force it into the place just occupied by the removed tumor; two things cannot be in the same place at the same time, and you would be sure to cure the condition. A permanent cure, however, thus attempted, would have to be secured by a permanent filling up of the cavity. If convenient, the best way to accomplish this would be to send your patient to his dentist; but if this could not be done, then a piece of gutta-percha, sufficient to fill the cavity, might be softened in a flame and thus be packed into the tooth. A little cold water held in the mouth for a few moments would harden this, and it will sometimes last two or three years, particularly if all decay has been removed from the parts before its introduction.

This, then, is a history and the treatment of one of the epulides; the other extreme will, sooner or later, compel me to resect the whole jaw before you.

Here is a specimen which I desire to show you. It is a model of a molar tooth,—an exact model, only hundreds of times enlarged. It has, as you see, a great cavity occupying the whole of the grinding surface, in this cavity is a red, fungous mass. The cavity communicates with the pulp, and the mass is the representation (often seen in practice) of a diseased hypertrophied pulp. Imagine now this pulp so overgrown and fungous as to bulge out over the tooth; covering it, as a thimble covers the finger; concealing it indeed from view and hugging closely the surrounding gum. Do you not think it would be a very ugly sight, and, to one not having an understanding of it, would it not be confusing? Many a man has lost a section of his jaw for such a tumor, and yet for its cure nothing was demanded but the extraction of a tooth,—this you certainly see, for the association of such a tumor is alone with the inside of the tooth, with its nerve or pulp cavity.

Here is still another specimen. You observe that on the side of one of the roots of this tooth is a hole. If the tooth was in the mouth, this hole would be the eighth of an inch at least below the margin of the gum. Out of this hole you notice the projection of a red fungous mass, precisely indeed like the last case except that it is smaller. This is a pulp fungoid also. After a time such a growth will work its way upward to the free surface of the gum, and will deceive any one not very conversant with such things. You will diagnose such growths by observing the following suggestions: first, these tumors are invariably fungoid; second, they will be found to hug more or less closely the side of the tooth; third, it is possible, by gentle manipulation, to work down alongside of them until the origin is seen. To cure them, it is only necessary to extract the tooth. These growths belong to the epulides—they are epulo-pulp-fungoid tumors.

[Dr. G. then exhibited patients upon whom he had operated at various times for the cure of different forms of epulic tumors, showing the advantages of certain forms of operation over others, and demonstrating the non-necessity for the extensive removal of bone so often commended and practiced.—De F. W.]

Angionoma.

Gentlemen,—I have to present to you this morning two patients, both infants, who will illustrate almost the two extremes of a class of tumors known as vascular or erectile growths, or nævi.

Upon the cheek of the first you will notice a small, dark spot barely distinguishable, yet sufficient to attract the eye of the anxious parent. It is a "mother's mark," and is an insignificant, harmless little tumor, requiring but a simple operation.

The other, a colored babe, aged six months, has, as you perceive, upon the side of its face, in the neighborhood of the angle of the jaw, and extending into the parotid region, a tumor of the size of a small orange,—a tumor which, as you will soon discover, is a grave and serious lesion, requiring an operation of such magnitude as to seriously endanger the life of this child. The mother informs me that this was discovered soon after birth, but was then of small size; that it has been steadily growing since that time, and that for the last few weeks it has increased with such alarming rapidity that she has been sent to us from the country to ascertain whether there be any hopes of operative relief, for she fully understands that the child must die from hemorrhage consequent upon rupture or ulceration of this mass unless it is removed.

You will see that this tumor is soft and elastic; that it pulsates strongly, which pulsation is synchronous with ventricular systole; that it can be diminished by steady pressure; and that it enlarges whenever the child makes any violent exertion, as in crying, coughing, etc. It is, therefore, an erectile growth,—a congeries of dilated blood-vessels, tortuous arterioles and capillaries bound together by subcutaneous connective tissue; it is a vascular tumor, and belongs to the same genus with the nævi.

The color of these vascular growths depends upon the excess in their composition of either the arterial, venous, or capillary element, and this color does not gradually fade out into the surrounding tissues, but is abrupt in its definition, owing to the facts that these tumors are usually supplied by one or two large blood-vessels, while their vascular connection with the adjacent parts is but moderate, and the smaller nævi are evidently but a hypertrophy of the radicles of these principal vessels.

In the tumor before us we have one which is largely arterial; it is what is often called an "aneurism by anastomosis," but it is not, properly speaking, an aneurism, but is an enlargement of the terminal branches of these vessels of supply, and is in fact an exaggerated nævus, its variation being in degree, not in kind. The same remark will hold good in regard to the venous tumors so often found, which differ only in having an excess of venous dilatations: they may differ widely in degree, but they all belong to one genus,—they are vascular, "bloody" tumors.

For the relief of such a lesion as this, a cutting off of the source of supply would at once suggest itself; yet should we cut down and tie the external carotid, we know that the anastomoses of the arteries of the face are so free with those of the opposite side, as also with the internal carotid by means of the nasal and other branches of the ophthalmic, that we should not thus be able to check the current. Nay, further, should we even ligate the internal carotid, we might still have the supply kept up through the circuitous but constant route of the profunda

cervicis, from the subclavian, and the princeps cervicis, from the occipital, a branch of the external carotid, the circulation being thus quickly established and our object defeated after all the dangers of such an operation. This method, therefore, will not be adopted, but we will take the surer plan of excision, which truly will be a formidable operation when we consider how vascular are these parts even in their normal condition, but now rendered doubly so by disease, and dangerous also from the close proximity of so many large arterial trunks, as you will see by this dried preparation, especially as I doubt not ere the operation be completed we shall be down almost upon the carotids themselves; yet with proper care, and due attention to the prompt ligation of all severed vessels, I think we shall be able to remove it without dangerous loss of blood. We shall not, however, endeavor to excise this mass entirely by the knife, but shall first cut away all the surrounding structures, and then throw a strong ligature around its base, thus strangulating the remaining portion and ridding ourselves of the greatest source of alarming hemorrhage, *i e.* the last few incisions which would cut the great vessels supplying it with blood.

When the tumor is small, as in the first case before us, strangulation is the preferable method, either by encircling the mass as a whole, or—as the skin is liable to take on erysipelatous inflammation—by first circumscribing it by an incision of the integument, and then directing the ligature into this cut surface; or again, we may pass a double ligature through its base and tie it in two portions. The second method is the best, in my estimation.

Another mode of cure of these small growths is by the action of *pressure*, exerted either by means of a compress, or by collodion; but it is a procedure only applicable to certain situations. Needles, heated to whiteness, have also been passed through the base of these tumors, and have sometimes resulted in cure.

Electrolysis has also been of service in some cases of nævus, but it is limited in its application, and is so slow in its action that patients usually prefer the more rapid methods of excision or ligation. The great difficulty to be encountered arises from the fact that occlusion of a veinule or other radicle seems to have but little influence upon its neighbors, thus necessitating repeated operations, until the electrolytic action has directly influenced almost each individual vessel. Moreover, since galvano-puncture thus cauterizes the tissues as well as coagulates the blood, it is evident that a slough must ensue, provided the superficial portion be much affected; and if such an occurrence must take place, with its consequent cicatrix, it is preferable to have it occasioned by the more speedy action of a ligature. The slough of galvano-puncture is, however, perfectly devoid of hemorrhage, since it is tardy in its separation; and it is remarkable for its extreme dryness.

These objections to its use only apply, however, to nævi which are superficial, or where the skin is implicated. In subcutaneous nævi the operation possesses the advantage of being more safe and certain than injection, and in cases where no slough is necessitated we dispense with the scar of an excision or ligation—that is, provided insulated needles are employed.

A Bunsen or other battery may be used, the number of needles varying with the size of the tumor; but in all cases care should be taken not to carry the action beyond the whitish hue indicative of cauterization. In regard to the introduction of gas into the circulation by this method, I do not think there is the slightest danger in cases of nævus, though spoken of by Rutherford and other able writers on electro-therapeutics. In cases of huge nævi or vascular tumors like the one before us, this course might be pursued with advantage, especially when excision is hazardous, but I think we shall be able to accomplish our present object in perfect safety with the knife and ligature, and save much time and trouble thereby.

Another mode of removal of nævi is by the use of *caustics*, such as chloride of zinc, corrosive sublimate, Vienna paste, or the strong acids. The *seton* is also sometimes used, and its presence occasionally causes sufficient irritation to obliterate the vessels and leave behind no perceptible scar.

Hypodermic injections were quite in vogue, but owing to several deaths which have occurred from the carrying of clots into the circulation, have fallen into disuse. The substances used were iron, nitric acid, iodine, creasote, etc.

A method practiced by some English surgeons is that of "piecemeal" removal; *i.e.* tearing the mass away, fragment by fragment, the object being to prevent hemorrhage, upon the same principle as tortion of arteries.

Each one of these operations will be found applicable to certain situations or conditions, and from them we must select the one best suited to the case upon which we are to operate; but as a rule I prefer the use of a knife to circumscribe the tumor, then to be followed by a ligature. In regard to the time of operation upon an infant, I will only say that we should always remember that a nævus may spontaneously disappear or become atrophied, in a few weeks after birth, or it may ulcerate and thus destroy the unhealthy tissue; but this event is so rare that we need not wait long for its occurrence.

The age of the child will not make any great difference—its present condition will, however, vastly affect the result; that is, a child who is teething, or has just passed through an attack of measles, or cholera infantum, will be far less likely to endure an operation well than one who had fully recovered from such a disease. Put your patient in a good sound condition and then operate, no matter what its age may be.

[Two incisions two inches long and crossing each other at right angles were then made through the integument, and the four flaps dissected off the tumor. The knife was then carried through healthy tissue completely about the mass, each artery being compressed or picked up as it was divided, so that comparatively little blood was lost. As the deep portions were reached it became necessary to cease the incisions by reason of the size of the arteries, and a strong ligature was then thrown around the base, tightly strangulating the remainder and cutting off all nutrition. The wound was dressed with carbolic acid oil; stimulants and anodynes freely given, and the infant soon rallied. On the fifth day the slough separated, and the four flaps, which had before been left loose, were then laid in place and secured by harelip pins and interrupted suture. The cure has been most satisfactory.—De F. W.]

Deformity of the Mouth. Dieffenbach's Operation.

The next case which I have to show you, Robert C., aged eleven years, is suffering from a deformity of the mouth, resulting from the contraction of the cicatrix of a slough, which was one of the many concomitants of scarlatina,—a disease which, as you know, may be followed by lesion of almost any structure of the entire body. You will perceive that the left angle of the mouth is drawn downward and pulled inward, or puckered in such a manner as to give an unpleasant appearance to his face, and he desires us to rectify this condition if possible. This is not a common deformity, yet it is sometimes met with, as a result of wounds, burns, etc., and we must study the complications which exist in each case, governing our operation by the extent and character of the contraction.

In looking at a case of this kind, you must bring to bear upon it all your artistic, as well as your surgical skill,—you must look at and view it in different positions, until you have decided what alterations are necessary to bring the deformed mouth into a normal condition with the labial curves and commissures in their usual beautiful symmetry; and in order to do this, map out in your mind's eye, or still better in ink upon the face, the proper outlines of a perfect mouth; then you can arrange your incisions to suit the particular deformity.

In the present instance the contraction is not as great as is often seen, where the orifice is sometimes so small as barely to admit of the passage of the little finger, and it is therefore comparatively an easy case.

For the relief of this difficulty, the first thought would be to merely incise the commissures to the required extent; but unfortunately such a procedure would only be followed by speedy union and greater consequent contraction than before, since it is impossible to prevent union of the fresh surfaces, even though tents, lead, etc. be interposed.

Mechanical dilatation gives severe pain, and does not produce any permanent good.

The only method which has stood the test of practical surgery has been that of Dieffenbach, of Berlin. This operation is performed by the introduction of one hand into the mouth of the patient, in order to direct the incisions and render the cheek tense; then, inserting the blade of a pair of scissors into the cheek about two lines outside the point intended for the commissure, a cut is made inward and upward, dividing all the tissues save the mucous membrane, until a point is reached in the upper lip which, when brought down and stitched, will fulfill the required conditions. A similar incision is then made from the same starting-point, but downward and inward to the inferior lip, which in turn is divided to nearly the same extent as the upper, the cuts in each instance being varied to suit the irregularities in the position of the contracted orifice. The triangular flap is then to be dissected off down to the submucous layer, thus leaving but mucous membrane, which must in its turn be divided in a straight line to a point two lines inside the angle of the external incision.

The mucous membrane is now turned over above and below, to imitate the normal lip, and its edges sutured to those of the integument, thus forming the vermilion border of a new lip.

This operation answers admirably, but unfortunately the mucous membrane sometimes participates in the cicatrix, and the operation cannot be satisfactorily performed; or again, certain accidents may come between the surgeon and success, so that a cure is not always effected.

In such cases I am in the habit of modifying this operation, or rather of associating a mechanical appliance with these surgical means. This appliance consists of what might be called a "mouth-stretcher," made of wood or rubber, of the shape of an ordinary mouth, and with a deep groove about its entire circumference, which is slipped between the lips after time has been given for the union of the reflected mucous membrane. The lips are caught and held by the gutter of the apparatus in the whole of their circumference, and thus not only is healing influenced to a desired shape, but undue cicatricial contraction is also prevented. This instrument should be constantly worn for a week or more, after which time its use should be continued at night until all contraction has ceased, just as you introduce a sound into the urethra for some time after the operation of perineal section. This appliance also does more than this—it may even remedy defects which are the fault of the operator, by compelling the regular healing of the wound. Such mistakes you will make unless you carefully weigh each case. You must bring into use all your mechanico-surgical skill, and work with a definite object in view.

[The incisions were then made as described, the tissues being removed down to the mucous membrane, which, when itself incised, was brought over and firmly stitched to the integument. At each step of the operation the case was examined both from a near and distant standpoint, thus rendering the final adjustment a more perfect success. Cold-water dressings were applied, and the boy directed not to exert any strain upon his mouth until union was effected.—De F. W.]

EDITORIAL.

USE OF MAGNIFYING GLASSES IN EXAMINATIONS AND PERFORMING OPERATIONS.

In a communication addressed to the Dental Cosmos some time ago, Prof. W. H. Atkinson directed attention to the necessity of employing magnifying glasses in the performance of dental operations. The subject is one to which I feel called upon to add my testimony, with the hope of inducing others to use these indispensable accessories.

Twenty-three years ago, when a student of dentistry, I was convinced of their value and importance in observing the manipulations of the late Prof. Elisha Townsend, one of the most finished operators and polished gentlemen that has adorned our profession, and whose operations stand to this day as evidences of his skill and thoroughness; the son of a watchmaker, he had in early life devoted several years to his father's occupation, and had there acquired the habit of employing a magnifying glass similar to that used by engravers. In finishing his operations on the teeth, it was his invariable rule to examine with the greatest care the margins of the fillings with his glass, and there is no question that the enduring character of his work may be largely attributed to the conscientious manner in which this was done. From that time up to the present I have always had in my operating-case a magnifying glass of about four diameters, set in a frame similar to the ordinary eye-glass, and to me this is indispensable, whether engaged in making an examination of the teeth, or in finishing an operation. In previous communications I have dwelt upon the care with which examinations of the teeth should be conducted, and would here add that, in addition to the use of delicate probes and mouth glasses, a magnifying glass would prove of service even to the keenest eyes, by revealing defects, particularly in the depressions on the articulating surfaces of the molars and bicuspids, the lingual and buccal sides of the upper molars, and the buccal surface of the lower molars. The microscopical holes and fissures in these localities, passed over by careless observers, frequently lead to extensive cavities underlying the enamel. Over and again with the

glass, I have detected flaws in the teeth, which, to the naked eye, appeared without blemish. Again, in polishing the teeth after scaling the tartar, one who has never used a magnifying glass upon the teeth would be surprised to observe how incomplete the operation has been performed, even where the stick and polishing powders have been used apparently with the greatest care.

In the introduction of a gold filling, it matters not how thoroughly gold may have been introduced into the cavity, if the surface of the filling is not carefully finished, particularly at the margins, where it comes in contact with the enamel, it cannot be regarded as a perfect operation, or one that will prove of an enduring character. No eye, however keen, can detect flaws which would be boldly brought into view by the aid of the glass. For reasons such as these, and with the desire to present them in the fewest words possible, I would advise the general use of the magnifying glass, that the examinations and operations upon the teeth may be more thoroughly performed. J. H. McQ.

REMOVAL.

Dr. J. H. McQuillen has removed to the S. W. corner of Twenty-first and Arch Streets, Philadelphia, where all communications for the Dental Cosmos should hereafter be addressed.

OBITUARY.

ROBERT THOMAS HULME, M.R.C.S.

We regret to announce the death of a prominent member of the dental profession, Robert Thomas Hulme, M.R.C.S., well known as an author, and formerly the able editor of the *London Dental Review.*

In an obituary notice from the pen of Mr. Charles James Fox, we find that Mr. Hulme expired at Felstead Place, Essex, on the 9th of July, 1870, aged 54. He was born in the city of London, in January, 1816, and commenced his medical education at an early period, at a London hospital, and, subsequently, prosecuted his studies in dental surgery as a pupil of Messrs. Barclay & Heath.

He commenced practice in 1840. "As a man of science his exertions were well known and appreciated when he occupied the post of Lecturer on Comparative Anatomy at the Grosvenor Place School of Medicine. Indeed, the cultivation of comparative anatomy was his great delight. As a lecturer he greatly excelled. His knowledge of every subject he handled was complete,—he never undertook to speak upon what he did not understand. He did not have recourse to notes in lectures, but

spoke extemporaneously and with effect. Many a young man of the present day, whether in practice as a medical man after studying at the Grosvenor Place School or as a dental surgeon, once a pupil of the Metropolitan School of Dental Science, will remember the impressive lessons taught them by Mr. Hulme in his capacity as lecturer.

"Mr. Hulme was the author of several works and translations, including 'Lectures on Diseases of the Dental Periosteum,' 'Dental Materia Medica,' 'The Teeth in Health and Disease,' translation of Dr. Brierre de Boismont on 'Hallucinations,' Moquin-Tindon's 'Medical Zoology,' and last, though by no means least, of 'Beraud's Atlas of Surgical and Topographical Anatomy.' His other contributions to the English and foreign scientific press were numerous and of considerable interest, and he was a member of several English and foreign scientific societies.

"Of late Mr. Hulme was known as an active supporter of the College of Dentists, and, upon the amalgamation of that body with the Odontological Society—of the United Institutions—he was appointed Curator of the Odontological Society just at the time his health began to give way, a fact which explains an apparent want of attention to the duties of an office for which his abilities so well fitted him. About this time he inherited a fortune, and at the same time lost his wife, leaving to him the care of an only child—a boy of four years of age. These events were followed (a little before Christmas last) by a paralytic seizure which took away the use of his right side. At the beginning of June in the present year he had a second attack, which ultimately proved fatal.

"Mr. Hulme was highly esteemed by those who knew him best as an honorable and talented man, and by them is greatly regretted."

J. H. McQ.

DR. JAMES B. BEAN.

We also regret to announce the death of Dr. James B. Bean, of Baltimore, who lost his life in an attempt to ascend Mont Blanc, in company with two other tourists and five guides, in the early part of September.

Dr. Bean was a man of considerable mechanical ingenuity and skill, and contributed a number of able articles to the Dental Cosmos. He had been engaged in the practice of dentistry for a number of years in the city of Baltimore. Our personal acquaintance with him was of a limited character, so that we are unable to say much of his antecedents; but in the few interviews with him, his gentlemanly bearing and decided evidence of ability and enlarged views, made a very favorable impression.

J. H. McQ.

DR. WILLIAM K. BRENIZER.

We are also pained to announce the death of our friend, Dr. William K. Brenizer, of Reading, Pa., a gentleman of large information, liberal ideas, and high-toned character, who had been engaged in the practice of dentistry in Reading for about twenty years, occupying there a leading position, and enjoying the respect of the profession, and the confidence of the community. Being of a retiring nature, he did not take that active part in the associated efforts for the advancement of the profession which he was well fitted to discharge; at the same time, however, he by no means held aloof from such organizations, but, on the contrary, gave his support to the formation of the Odontographic Society; and it is stated that mainly through his instrumentality the Lebanon Valley Dental Association, of which he was the first presiding officer, was put into successful operation. J. H. McQ.

JOHN W. CRANE, M.D.

Died in Hartford, Conn., April 11th, 1870, John W. Crane, M.D. Dr. Crane was a graduate of the Castleton Medical College, Vermont, and practiced medicine for a time in Hartford. Deciding to turn his attention to the practice of dentistry, he went to Boston, and studied with Drs. Cogswell and Flagg. He then returned to Hartford, where he opened an office, and practiced there till the year 1834, when he removed to New York, and opened an office in Park Place, where he enjoyed a large practice for many years. Dr. Crane was a skillful operator, and an ingenious mechanic. The writer has had the pleasure of examining fillings, introduced by him nearly forty years ago, that would compare favorably with modern operations. The doctor was in active practice for over forty years, and at one time was comfortably well off in this world's goods; but late in life met with reverses, and died, comparatively poor, at the age of seventy-one years.

His son, whom many of the members of the national association will remember seeing at the Saratoga meeting, is in practice in Paris, France. J. McM.

BIBLIOGRAPHICAL.

Hand-Book of Medical Microscopy. By Joseph G. Richardson, M.D., Microscopist to the Pennsylvania Hospital, etc. Philadelphia: J. B. Lippincott & Co., 1871.

A copy of the above work has been received from the publishers—too late, however, for comment in this number. It will be noticed in the December number. J. H. McQ.

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

"*Human Force.*—Regarded simply as a piece of machinery, the human body is the most interesting study that can attract the attention of a human being. According to the latest developments of scientific analyses, the average healthy man generates force sufficient, every twenty-four hours, to lift 4000 tons of matter through a distance of one foot, providing the work is done with no waste of strength ; or, to vary the statement, to lift one ton 4000 feet. On inquiring of the physiologist what becomes of all this power, he figures out for us the following rude statement:

"Spent in generating heat with which to keep the body warm, power sufficient to raise 3475 tons of matter one foot high.

"Spent in digesting our food, circulating the blood through the body from the heart, in its course back to the heart again, and in the movements of the lungs in respiration, power sufficient to raise 350 tons one foot high.

"Left for profitable employment, in the form of brain and body labor, power sufficient to raise only 175 tons one foot high.

"Total—4000 tons one foot high.

"From the foregoing statement, which, of course, is only an approximation to the truth, and would vary materially in different persons, the available working power of an adult healthy man is only one-twenty-fourth part of the force generated by the food he eats, or, as before stated, sufficient to raise 175 tons of dead matter one foot in height.

"But we prefer not to spend our strength in this way, and so a certain per cent. of it goes in muscular labor, some in business, a portion in thinking, loving, hating, in invention, philanthropic action, etc.; and, no doubt, in a majority of human beings, a large portion of their available power is wasted in dissipation, riotous living, gambling; or perhaps in uneasy, fretful fault-finding, because their lot is not one that pleases them, or because they are obliged to labor for the bread they eat and the clothes they wear.

"A very curious and interesting table might be made by a thoughtful physiologist and hygienist, showing each person where his strength goes, and I am not sure that a young man could do a better service for himself than to seek the counsel of some wise physiologist, tell him frankly all his habits, and have such a table prepared, not only to guard him against excess, but to show him his weak places, and point out where he will be most likely to fail. Some of these tables would, no doubt, read very much as follows:

"Spent in digesting a big dinner, which the body did not need, sufficient force to raise 30 tons of matter one foot.

"Spent in getting rid of several drinks of wine and brandy, force sufficient to raise 20 tons one foot high.

"Spent in smoking six cigars, force sufficient to raise 10 tons one foot high.

"Spent in keeping awake all night at a spree, force sufficient to raise 20 tons one foot high.

"Spent in breathing bad air, force sufficient to raise 15 tons one foot high.

"Spent in cheating a neighbor out of 30 dollars in a business transaction, force sufficient to raise 15 tons one foot high.

"Spent in reading worthless books and newspapers, force sufficient to raise 5 tons one foot high.

"Spent in hesitation, doubt, and uncertainty, force sufficient to raise 5 tons one foot high.

"Total—120 tons one foot high.

"Left for practical and useful labor only enough to raise 55 tons one foot high, or to do less than one-third of a day's work.

"Sometimes there would be a draft on the original capital of considerable force; so there would not be enough to keep the body warm, or the food well digested, or the muscles plump and full, or the hearing acute, or the eyes keen and bright, or the brain thoughtful and active.

"Very often a single debauch would use up the entire available power of the whole system for a whole week or month.

"There is no end to the multitudinous ways in which we not only spend our working capital, but draw on the original stock that ought never to be touched, and the result is imperfect lives, rickety bodies, no ability to transmit to our children good health and long life, much physical suffering and premature decay, with all the ends of life unaccomplished."—(*Herald of Health* and *Philadelphia Press*.)

—

"*Blood Pictures.*—Dr. Day, of Geelong, Australia, the improver of the guaiacum-tests for blood and other animal fluids, confirms the discovery of Neumann, that the picture or network formed by human blood can be distinguished under the microscope from that which is formed by the blood of other animals. He says he has repeated the experiment, which is 'wonderfully simple,' almost every day for the last two months, with invariable success. A small drop, not a mere speck, of the blood is to be placed upon a microscope slide and carefully watched, at a temperature of 10° or 12° Reaumur (=54·2° to 59° Fahr.), until the picture or network formed by its coagulation is developed. Human blood speedily breaks up into a 'small pattern' network; the blood of other animals (calves, pigs, etc.) takes a longer time and makes a larger pattern; but the blood of every animal seems to form a characteristic 'picture.' Dr. Day has examined the blood of calves, pigs, sheep, rabbits, ducks, hens, several kinds of fishes, etc., as well as that of man, and has found the results to be trustworthy and constant."—(*Brit. Med. Journ.* and *Medical Gazette.*)

—

"*Protoxide of Nitrogen as an Anæsthetic.*—A valuable article on this subject recently appeared in the *Phila. Med. and Surg. Reporter.* The conclusions to which the writer (Dr. J. J. Colton) arrives may be briefly stated as follows: (1) that persons breathing protoxide of nitrogen exhale a larger amount of carbonic acid than while breathing common air; (2) that its action is essentially oxidation, and that the excess of carbonic acid in the system is merely incidental, and in no wise sufficient to produce anæsthesia; (3) that its inoffensive effects are due to its action as an oxidizer; (4) that no subsequent depression follows, but rather a rapid reaction, because, acting by oxidation, the products of its combinations are speedily eliminated from the system; and (5) that its

remarkably powerful action is due to its entering into new combinations, just at the moment of its liberation, when in its nascent state.

"In closing, the writer expresses his 'profound conviction that the pure protoxide of nitrogen, administered within proper limits, is harmless in its action, while if made from contaminated materials, if generated at too high a temperature, if used immediately after it is made, if the impurities ordinarily found in it be not removed, if inhaled in sufficient quantity to produce profound anæsthesia after being prepared for a few days, or if the administration of the *pure gas* be persisted in beyond *certain limits*, it is capable of an immense amount of mischief.'"—(*Boston Jour. of Chemistry.*)

Somnambulism artificially produced.—Dr. Jas. Russell says (*Med. Times and Gaz.* and *Boston Med. and Surg. Jour.*) "somnambulism may be produced artificially. Dr. Richardson has recorded some interesting observations in the Reports of the British Association, 1865, p. 274, showing that a state analogous to somnambulism sometimes follows the inhalation of amylene. A patient was entirely senseless, and in this condition underwent a severe surgical operation; yet 'she talked with considerable correctness on the topics of the day, seizing objects with precision.' He experienced proof that he had produced the same condition in his own person, though quite unconscious of his acts; and he quotes a like instance witnessed by Dr. Snow, in which a child played with a ball, throwing it into the air, catching it with precision, talking and laughing all the time, yet to all appearance perfectly unconscious.

"Certain phenomena prove that varying conditions of different parts of the brain, as regards the state of activity, may be consistent with the continuance of sleep, though whether with what is understood by the perfect form of that condition has been differently interpreted; it seems certain that some portions of the organs may be asleep while others are, at least partially, awake."

Methyl Compounds.—Dr. B. W. Richardson read a report on this subject to the British Association for the Advancement of Science (*Lancet*), in which he stated "that, among other things that had been discovered by his experiments made during the past year with anæsthetical bodies, was that it was possible to remove pain without removing consciousness, although any act performed by the patient was afterward forgotten; the nervous centre which produced sensibility was affected and paralyzed before those centres which were devoted to consciousness. He thought it very possible they would be able to produce paralysis of sensation throughout the body without destroying consciousness at all. In the discussion which ensued, Dr. Turnbull said the subject was an important one, and he believed the author's researches would lead to useful practical results in the preparation of remedies. Professor Humphry of Cambridge looked forward to nitrate of amyl becoming a cure for those horrible afflictions, lock-jaw and hydrophobia. With reference to the distinction between the locality of consciousness and the locality of sensation, he knew an instance in which a lady, under the influence of ether, was aware that she was having the wrong tooth drawn, although she was unable to give utterance to the fact."

Bromide of Ethyl as an Anæsthetic.—The *Lancet* says "that in the investigation of new anæsthetic agents, the late Mr. Nunneley, of Leeds, experimented with more than forty substances, and the conclusions he arrived at are, we may say, as perfect as they can be. His descriptions were not so clear as those by Snow, and his style lacks the rebounding fullness which characterized the writings of Simpson; but his analysis of experimental results, his comparisons of one agent with another, his rigid adherence to nature, and his boldness in experiment, all combine to tell the story of a great and careful scientific observer. Nunneley discovered several new anæsthetics, particularly bromide of ethyl and chloride of carbon. He was of opinion that bromide of ethyl was the best known anæsthetic, least irritating, and most effective. He retained this opinion; and in March last, when we had the pleasure of a day or two with him, and we were putting side by side experiences, he expressed to us his still firm conviction of the correctness of his original estimate of this chemical substance. The work performed by Nunneley was manifold. He broke through the notion long prevalent that anæsthetics could only be found in a limited class of chemical compounds. He reasoned ably on the relation of physiological action to elementary composition, and he dealt with the question of the *modus operandi* of anæsthetics with judgment, knowledge, and insight rarely excelled."

—

"*Acetic Ether as an Anæsthetic.*—At a recent meeting of the College of Physicians, Philadelphia, Dr. H. C. Wood (*Am. Jour. Med. Sciences*) exhibited a specimen of *acetic ether* prepared for him by Mr. Chas. Bullock, of Philadelphia, and stated that he had not yet tried to fully anæsthetize the human subject, but in pigeons and rabbits it produced perfect unconsciousness without nearly so much previous struggling as when ether was used. It has a peculiar pleasant odor, very closely resembling that of apples, which no doubt owe their smell to it or the closely allied malic ether. An advantage which it has over sulphuric ether, especially for night use, is its comparative non-inflammability, connected partly with its lesser volatility. A pigeon passes gently into an insensible state, and awakes without struggling after a few minutes of quiet sleep."—(*Medical Record.*)

—

Chloral, Bad Effects of.—"A patient in Guy's Hospital, with aneurism of the thoracic aorta, being given half a drachm of chloral to allay pain and procure sleep, became unconscious immediately on the administration of the dose, with lividity and coldness of face and hands, and respiration only at long intervals, death seeming imminent for five hours. These symptoms passed off during the following day. In commenting on the case, Dr. Habershon remarked that it confirmed the opinion he had formed from observation of cases of pneumonia and bronchitis; namely, that chloral tends to cause bronchial and pulmonary congestion, through its action on the pneumogastric nerve, and that it should not be given where embarrassment to respiration is liable to occur."—(*Medical Gazette.*)

—

Iodine and Aconite in Periodontitis.—Dr. W. Whitelaw says (*Med. Times and Gaz.*): "Taking a hint from this journal for July 10, 1869, I have used it successfully for periodontitis, as recommended by Profes-

sor Abbott, of New York, in the following way: ℞ Tinct. iodine and tinct. rad. aconite, equal quantities. Apply to gums with a brush once or twice a day, three drops at a time. Allow to dry on gums."

—

Carbolic Acid as a Local Anæsthetic in Surgical Operations, Application of. By J. H. Bill, M.D., Surgeon U. S. Army.—"All who have handled this substance must have noticed the tingling sensation (not unlike that produced by aconite) in the finger-tips and other parts touched by the acid, which presently passes into a greater or less anæsthesia. On trying to determine the amount of this anæsthesia with an ordinary æsthesiometer, it was found not only impossible to distinguish two points, however widely separated, but even to recognize the presence of one.

"The prick of the point was not felt at all as pain, nor was an incision productive of uneasiness. The experiment was, therefore, extended thus: the radial side of the writer's left forearm was covered with a cloth soaked in a saturated solution for a half hour, then a streak was traced over the course of the radial artery with a camel's-hair brush dipped in acid liquefied by one-twentieth bulk of water. This streak extended from the styloid process to near the elbow, and after a few minutes was rubbed off. An incision was then made with a common scalpel from a point about two inches above the styloid process toward the internal condyle for five inches, occupying, as near as possible, the middle of the streak made with the brush, and extending down to the fasciæ, investing the flexor muscles (superficial) of the thumb and fingers, so that at its lower extremity the radial artery was exposed, and could have been ligated. This incision was unattended with pain, save where nerves distributed to, or passing over the muscular fasciæ were pricked or divided, and even in this case the pain was not at all unbearable. *The incision of the integument was painless*, and the writer would have been unconscious of the injury save from the sensation communicated to his hand holding the knife as it was drawn through the tissues. It was applied practically at once to all minor cutting operations. The writer has not incised a felon or bubo since without successfully employing this method for preventing or greatly mitigating pain. Many cases could be given; one will suffice. David Harris, of Vancouver, applied with his second finger of the left hand highly inflamed from a felon, the parts much injured by burrowing of pus. A previous felon had been treated on another finger a few months before, and the requisite incision had given him exquisite pain; the patient therefore apprehended great suffering from any operation on the finger now diseased, and begged for chloroform. However, the finger was soaked for fifteen minutes in warm water, containing three per cent. of carbolic acid, dried, and then a brush, dipped in the concentrated acid, was drawn over the finger in the course of the intended incisions. These, two in number, were then made, using a thin-edged scalpel by a slow, sawing motion, allowing only the weight of the knife to make the cut. The patient stated that he had suffered no pain, or not more than would have resulted from handling the parts. The parts healed at once. Sometimes it is necessary after making an incision nearly through the integument, if sensibility becomes apparent, to brush out the wound made with some liquefied acid before extending the incision deeper. This was necessary in a palmar abscess treated

by this method without pain. The writer has excised a small tumor partly by this plan. Buboes have been operated on painlessly, and in short, the writer can recommend the plan in any cutting operation where no dissection of the skin is involved, and where all the pain results from the cutting of the skin. It is hoped that it will be of special service to those who are compelled to operate without an assistant. The writer was thus compelled this summer to remove from his right hand, by an incision of over two inches in length, a large wooden splinter which had been thrust through the palmar fascia, and had lodged under the tendon of the lumbricalis of the index finger. It was done without pain, save where a nerve was divided. The incision healed without scar.

"These facts, which the writer believes he is the first to point out, have theoretical relations of great interest which may be discussed in a future paper."—(*Amer. Jour. Med. Sci.*)

"*Chemical Agents to be used as Antiseptics.* M. Faye. (*Comptes Rendus* and *Chem. News.*)—This paper contains a lengthy review on the mode of action of several substances used as disinfectants and antiseptics, and especially as regards the action of phenol (carbolic acid); but the author himself states that he did not think he could say anything new. A discussion arose on this subject, the speakers being MM. Dumas and Chevreul. The former *savant*, in the first place, observed that the author had forgotten that carbolic acid was used largely, and that its application was compulsory in some instances, as well as the use of bleaching-powder. Phenic acid acts, said the eminent speaker, in a double way—viz., by arresting the decomposition of albuminous and other organic compounds, in a manner somewhat analogous to tannin; and, secondly, by killing organic, as well as organized, germs and sporules of all sorts—and thus acts as antiseptic. The speaker advocates the simultaneous application of chlorine (fumigations) and of carbolic acid. M. Chevreul spoke at length on the difference of mode of action of various antiseptics and disinfectants, calling, first, attention to the fact that sulphurous acid and sulphuretted hydrogen, when mixed together and decomposing each other, are mutually disinfectants; that hydrochloric acid and ammonia are in a somewhat similar relation to each other; that charcoal acts as antiseptic in a different manner—viz., by its capillary action; while the action of carbolic acid is chiefly confined to the material source of bad smell, but not to the bad smell actually itself. The venerable speaker next entered into a series of details of researches made by him as far back as the year 1809, on the action of tannin and tanning materials, and on the peculiar action exerted upon animal matters even by such substances as chloride of iridium, bichloride of mercury, chlorine-water, salts of alumina, glucina, and others, all of which possess, in a greater or less degree, astringent tastes, and a peculiar property of combining with animal matters, and as consequence thereof, acting as antiseptics and antimiasmatics."

Chloralum, or Hydrated Chloride of Aluminium, as an Antiseptic.—"Mr. John Gamgee recommends (*Lancet*) the hydrated chloride of aluminium as possessing extraordinary value as a general antiseptic—'indeed, as a substitute for the very poisonous solutions of chloride of

zinc; the caustic carbolic acid, which from its smell cannot serve for many purposes; chloride of lime, which evolves the most unpleasant fumes when used in water-closets or elsewhere; the permanganates, which stain; and sulphurous acid, which cannot be conveniently used in hospitals or in the sick chamber.'

"This new antiseptic, which Mr. G. terms *chloralum*, is non-poisonous, entirely devoid of unpleasant smell, and may with perfect safety be used for the preservation of edible articles, such as meat, fish, etc.

"For ordinary disinfecting purposes, solutions varying from 1006 to 1010 specific gravity, are quite strong enough. It is quite harmless to vegetation. In the dead-house, the dissecting-room, museum, and laboratory, chloralum will be found invaluable."—(*Med. News.*)

"*Pulmonary Fetor.*—Dr. Laycock (*Edinburgh Med. Jour.*) asserts that there are three distinct kinds of pulmonary fetor—that of ozæna, that of fæces, that of gangrene. The latter, due to putrescent decomposition of pulmonary tissue, is characteristic of true gangrene. The ozæna odor is connected with chronic tissue changes of rheumatic origin, as with fibrinous exudation and degeneration. It is found chiefly in fetid bronchitis and bronchorrhœa, and in fetid fibroid vomicæ. The fecal odor may also be observed under these circumstances, and has too, probably, a rheumatic origin."—(*Medical Record.*)

Aphthæ from Milk of Diseased Cows.—"We are informed by a well-known physician, resident in a midland county, in whose district the cattle have been infected with the *foot and mouth disease*, that he has traced cases of aphthous ulceration of tongue and fauces, with a general disordered condition of system, to the use directly, in many instances, of milk from diseased cows, and in others who consumed milk from a suspicious source. Upon inquiring further into the subject, we find that the milk given by cows suffering from foot and mouth disease is altered in character, and that it is diminished in quantity. We are told the milkers notice its being ropy, and tenacious to the fingers, owing to the large quantity of mucus it contains. It is remarked to possess somewhat the appearance and taste of milk given by cows within a few weeks of calving. There can be no question of doubt respecting the alteration in character of the milk, and we believe we can implicitly rely upon the authority of our correspondent, who assures us that the milk given by cows diseased is, if extensively used as an article of diet, sure to manifest its deleterious influence upon the system, and that delicate women and weakly children are more generally affected. In one farmer's house every member of the family suffered from *parasitic thrush;* they were consuming milk from diseased cattle, and the medical attendant ascribed the existence of *oidium albicans* to some *materies morbi* existing in the milk; for when the use of it was discontinued the mucous surfaces affected speedily recovered their normal state. So it has been noticed by others that, when suspected milk was used and *aphthæ* were produced, a discontinuance of the milk soon permitted the disease to yield to simple treatment."—(*Med. Press and Circular.*)

Syphilis and Scrofula, Differential Diagnosis between.—The Paris correspondent of the *Medical Press and Circular* writes that "M. Bazin mentions a piece of diagnosis between disease of the nostrils

arising from syphilis and scrofula, which will be, I am sure, felt to be very useful by practitioners. He says that syphilis destroys first of all the bones and cartilages of the nose and of the palate before touching the integuments, while scrofula does not reach the bones before it has first destroyed the superficial parts. This is very practical."

"*Medullary Carcinoma of Antrum.*—Dr. Mears presented to the Pathological Society of Philadelphia the greater portion of the left superior maxilla, which had been removed by Dr. W. L. Atlee for disease involving the antrum. The following is the history of the case: R. A., aged 53, native of England, occupation cattle-drover, has always led an active out-door life, and enjoyed the best health. Two months and a half since, on his return home from a visit to the West, during which he was exposed to many hardships, he experienced pain in the left temporal region, extending down to the upper jaw, and felt most distinctly over the site of the antrum. The pain was severe and lancinating, and was thought to be due to neuralgia. Subsequently, the three molar teeth were extracted, under the belief that the pain was due to some disease of the nerves connected with these teeth. Soon after the extraction of the teeth, he felt a tumor projecting into his mouth. This tumor increased in size very rapidly, encroaching upon the cavity of the orbit of the eye to such an extent as to produce very marked exophthalmia. The rapidity of growth of the tumor clearly indicates its malignant character; it possesses the gross appearance of infiltrated medullary carcinoma. The tumor was referred to the Committee on Morbid Growths, which reported that the tissue presented very numerous cells of rounded shape, varying greatly in size, and containing one, two, or even four comparatively large nuclei. The cell contents were markedly granular, and in some instances mixed with fatty granules. There was in addition much free oil, and occasional small plates of cholesterin. A few compound granule cells were also seen. The tumor appears, therefore, to be of an encephaloid nature."—(*Amer. Jour. Med. Sci.*)

"*Sarcomatous Fibroma of Upper Jaw* (*Epulis?*) *successfully operated upon.* By R. A. Kinloch, M.D., Professor of Surgery in the Medical College of the State of South Carolina, Charleston, S. C. Read before the South Carolina Medical Association, at the Annual Session, 1870.—Prof. Kinloch's case is one of very great interest. The patient, a negress, aged 25, suffered from an enormous tumor which occupied the front and right side of the face, filling the buccal cavity, and projecting through the aperture of the lips, which it greatly distended. The lower teeth were completely hidden by the growth, which forced the chin down toward the sternum, while by its encroachments in other directions, it had flattened and displaced the nose, and had almost closed the right eye. There was, moreover, a lachrymal fistula, and the patient, who had of course lost the power of chewing, could scarcely articulate, and breathed with difficulty; salivation existed, with much fetor. The projecting part of the tumor (in which were imbedded two teeth) was pink, shining, firm, and elastic, without any ulceration; the semi-circumference of the growth, which had originated only eleven months previously, was no less than twelve and a quarter inches.

"The tumor was removed, together with the right upper jaw, by

two incisions, one running through the centre of the nose and lip, and the other passing from the zygoma to the angle of the mouth. No ligatures were required, and the patient made a rapid recovery, the greater part of the wound healing by adhesion. A slight plastic operation subsequently removed a little deformity at the angle of the mouth, and the photograph, taken two and a half months after the removal of the tumor, shows what must certainly be considered a most admirable result. The tumor, which weighed nearly two pounds, exhibited under the microscope a fibrous stroma interspersed with numerous small circular nucleated cells."—(J. A., Jr., *Amer. Jour. Med. Sci.*)

—

"*Liquid Glass (Silicate of Potash) as a Surgical Dressing for Immovable Apparatus, and Hair as a Suture and Ligature.* By J. T. Darby, M.D., Professor of Anatomy and Surgery in the University of South Carolina, Columbia, S. C. Lecture before the South Carolina Medical Association, at the Annual Session, 1870.—In the first part of Prof. Darby's interesting paper he gives an account of six cases in which he has employed the silicate of potassa, or soluble glass, as a substitute for starch or other material in the application of the immovable bandage, or, as the French more accurately call it, the '*bandage amovo-immobile.*' Two cases were of fractured thigh, one of separation of the epicondyle of the humerus, one of ununited fracture of the leg, one of hemorrhagic ulcer, and one of sprained wrist, bent radius, and dislocation of the ulna from its radio-carpal joint. The result in each case was satisfactory, and Prof. Darby declares that, after a fair trial, he is induced to place the silicate above either plaster, starch, glue, or dextrine, for general usefulness. The soluble glass is applied either with the hand or with a brush, three or more layers of bandage being used, according to the degree of firmness required. Similarly favorable testimony on behalf of this mode of dressing is adduced in an extract from a letter received by Prof. Darby from Dr. R. W. Gibbes.

"In the second part of Prof. Darby's communication he details twenty cases of wound or operation in which he has employed *horse-hair* as a suture or ligature. This material, which he began to use in 1868 (not knowing at that time that it had been previously employed by Mr. T. Smith, of St. Bartholomew's Hospital), seems to have proved in Prof. Darby's hands quite as unirritating as the metallic suture, while an obvious advantage was in many instances derived from its greater flexibility. For ligatures it was found abundantly strong, and much more readily tolerated by the tissues than the ordinary silk thread. Prof. Darby recommends that the hair should, before it is used, be washed in a weak solution of carbolic acid."—(*Ibid.*)

—

"*Necrosis of the Lower Jaw from Undeveloped Teeth.* Case by J. H. Pooley, Jr., M.D.—Mrs. B., aged 30. Has had three children; health has been good until within the last year or two, when she became much debilitated from quickly succeeding pregnancies, and the care of a sick child, which died after a very protracted illness.

"Her second dentition was irregular, two of the incisors of the lower jaw not making their appearance, and those which did come through being so uneven and misplaced that they were removed, and false teeth substituted. About a year ago she noticed that the plate of her artificial teeth began to give her pain and uneasiness; soon after this,

an indolent swelling made its appearance upon her chin, just beneath the lower margin of the jaw; this was opened, but very little matter came from it; the opening did not heal up, but remained open, with everted mucous-looking edges. Subsequently a similar swelling made its appearance about an inch distant from it on the other side of the symphysis menti, and was also opened; like the first, it gave exit to very little matter, and did not heal up, presenting, in a short time, an appearance exactly similar to the first.

"When I first saw her (June, 1869) these two sinuses were still open and discharging, presenting very markedly the peculiar appearance of openings leading to diseased bone; upon introducing a probe into either of them it came in contact with exposed bone. There was considerable inflammatory thickening around them: the integument was of a dark red or purplish color, and there was considerable elongation and projection of the chin.

"Owing to the irritation produced by the examination, an abscess formed between the openings, which, in contradistinction to the former ones, was painful, hot, and throbbing; was opened in a few days, and gave exit to a considerable quantity of healthy well-formed pus, but did not heal up, remaining fistulous like the others. There were now three openings along the margin of the jaw,—one about the symphysis, and one about half an inch distant on either side of it. For reasons which made delay advisable, nothing was done until November 23d, 1869, when an operation was performed for the removal of the dead bone.

"An incision was made along the lower margin of the bone, as far back as possible, extending about an inch and a half on each side of the symphysis, and through the middle of the open sinuses, and the bone exposed. No detached bone was found, but that portion forming the projection of the chin was rough and carious; the whole of the diseased portion was removed by the saw, aided by bone nippers and chisel, it being impossible to complete the section with the saw without enlarging the external wound, which it was desirable to avoid, if possible.

"On the surface of the remaining bone was found a small cavity, lying loosely, in which was an incisor tooth, fang downwards, the crown and neck of which were carious. It was removed and the cavity scooped out; it communicated with a small circular opening in the portion of bone removed, which in its turn led to one of the openings in the soft parts. On inspecting the portion of bone removed, the section was found to have passed through another tooth, an incisor apparently not perfectly developed, but quite sound and healthy; it was firmly imbedded in the bone; but partially surrounding it, and leading to another circular opening communicating with the other sinus in the soft parts, could be seen an irregular groove, as though nature were engaged in undermining it, and effecting its detachment. The surface of bone remaining seemed to be perfectly healthy. The patient made a good recovery, the wound healing up slowly but soundly, the cicatrix retracted and out of sight, and the red inflamed prominence of skin quite gone.

"I feel compelled to regard this case as unusual, and therefore interesting, as I cannot find any similar one referred to in Heath's very complete and recent monograph on diseases of the jaws, which I have looked over for that purpose. In Forget, on Dental Anomalies, is an account of errant teeth in cysts of the jaw. It may perhaps be a

fair question whether these decayed teeth were the exciting cause of the bone inflammation, or whether the inflammation arising spontaneously, or otherwise excited, was identified and localized around these foreign bodies. The main reason against the first supposition is this having remained so long without giving rise to any trouble; but it must be noted that this lady's feeble and cachectic state of health at this time may have determined an attack of inflammation from a cause which would not otherwise have given rise to it."—(*Medical Gazette.*)

—

Inseparable Maxillaries; Operation. By Edward Warren, M.D., Professor of Surgery, Washington University of Baltimore, Md.—" Miss D., of Virginia, had been salivated when four years of age, and from that time forward was unable to separate her jaws. An examination revealed the fact that necrosis, with exfoliation of the alveolar processes of the superior maxillary bone, had occurred, and that an exostosis had developed itself, which embraced the teeth of the inferior maxillary, from the canine backward, binding the two bones firmly together. Exterior to this, and in the substance of the cheek, strong and hard lymphous bands had formed, while the soft tissues had adhered generally to the bony structures in their vicinity, thus rendering the separation of the jaws a matter of impossibility and producing an unseemly deformity upon that side of the face. For *thirteen years* she had lived only upon such nourishment as could be introduced through clefts between the teeth, and, as a natural consequence, her *physique* was poor and her health precarious. Her articulation, also, was indistinct, as the movements essential to its perfection were prevented or circumscribed. I also learned that two operations had been previously undertaken, without results, and that she had visited Baltimore as a last resort, and with little hope of benefit. Careful manipulation having convinced me that the tempero-maxillary articulation was not anchylosed, I determined to make another effort for her relief. Having placed her in a semi-recumbent position, chloroform was administered, and the adhesions between the soft parts and bony structures carefully divided by means of a probe-pointed bistoury carried into the mouth—a procedure of much difficulty and danger, because of the contracted space in which the operation was performed and the proximity of the facial artery to the edge of my knife. The fibrous bands, previously alluded to, were then severed, together with some of the fibres of the masseter muscle. After arresting the hemorrhage which followed, by pressing compresses saturated with cold water against the cut surfaces, and removing the blood thoroughly from the mouth, the bony structure which bound the two bones together was next attacked. This was found to be so hard and unyielding as almost to defy my efforts, but, by the alternate use of saws, nippers, and gouges, it was finally broken up sufficiently to permit the extraction first of one imbedded tooth, then another, until they were all removed, when Liston's bone forceps were introduced and the remainder of the mass forcibly severed. I then separated the jaws to the greatest extent compatible with safety, by means of a large and strong pair of forceps passed between the maxillary bones and forcibly distended, so as to break up all remaining adhesions, and to ascertain the extent of movement still pertaining to the articulation. Having removed all fragments and coagula, I directed the chloroform to be discontinued so as to permit the patient to regain her consciousness, and then requested her

to open her mouth and protrude her tongue. Much to our mutual delight, we found that the front teeth of the upper and lower jaw could be voluntarily separated to the extent of an inch, and that the operation was a perfect success. Pledgets of lint, saturated in a solution of chlorinated soda, were then carefully introduced between the cheek and the bony structures from which it had been dissected, and also between the upper and lower surfaces of the divided osseous mass, in order to prevent their reunion; stimulants administered and the patient carried to her bed. From this time forward there was no further trouble. The pledgets of lint were removed and fresh ones replaced daily. The jaws were regularly and thoroughly opened at proper intervals, and muriated tincture of iron, with rich soup and fresh milk, were administered quite freely. In three weeks from the date of the operation my patient returned home *cured.* She was able to open her mouth well and to masticate food thoroughly; articulation was perfectly restored; scarcely any deformity remained; and there was a manifest improvement in her entire physical condition. The operation lasted two hours and twenty-five minutes, during the whole of which time she was kept under the influence of chloroform without the manifestation of an unfavorable symptom then or afterward. I am under obligations to Professor Chancellor and to Drs. Powell, of Baltimore, and Grant, of Virginia, for invaluable assistance in this case."—(*Medical Bulletin.*)

"*Dislocation of the Jaw.*—M. Clement, at a recent meeting of the Lyons Medical Society, related a case of bilateral dislocation of the jaw, which had been produced by muscular action, while the patient was examining his mouth in a mirror. Although the luxation had only existed an hour, he found on trying four times that its reduction was impossible by the usual procedure. He then with the end of his finger sought for the coronoid process, pushing the upper lip forcibly upward, and pressing the coronoid backward. The condyle re-entered its cavity with the greatest facility, and the same procedure succeeded just as well on the other side. M. Gayet observed that in this dislocation, in which muscular action plays so great a part, we should always try to turn the patient's attention from our procedures. In fact, this is probably what occurred in the present case, the patient involuntarily contracting his muscles during the first attempts at reduction, while, on the finger being introduced into the mouth in search of the coronoid, his attention being diverted, the muscles readily yielded He met with a similar case in which, after very painful efforts at reduction, the condyle suddenly returned to its cavity during an examination of the mouth."—(*Lyon Médical* and *Med. Times and Gazette.*)

Cicatrices from Burns, etc.; Treatment. By Frederic C. Skey, C.B , F.R.S., Consulting Surgeon to St. Bartholomew's Hospital, etc. (*Lancet*).—"Neither the skill of the operator nor the principles of conservative surgery—if I understand the application of the term, of which I am not certain—are more fully called into action than in the treatment required to mitigate or remove the evils attendant on *cicatrices from burns* or other causes of contraction of the skin. These painful consequences of local destruction of integument occur chiefly in the regions of the face and neck, the axilla, and the elbow. They must necessarily involve a joint, or the conditions of their existence fail. In the face and

neck the consequences are very distressing: the countenance is the subject of frightful distortion; the head, the lower eyelid, the cheek, and the mouth are drawn downward toward the clavicle, producing a hideous distortion of the human face. In axillary contractions, the arm is drawn to the side, and the muscles of elevation of the limb are useless. At the elbow the integument is so deficient as to draw the joint into permanent flexion, forming a thick band, extending from the middle of the forearm to some distance above the elbow-joint.

"With a view to remedy these evils, I have on several occasions resorted to the Taliacotian operation: dividing freely, and dissecting off the morbidly contracted skin, and replacing it by sound skin from the neighborhood. But, on the whole, the treatment has failed. It is sound in principle, but my experience would not, in my hands, justify the future resort to it; either the reunion of the apposite surfaces has failed, or the new integument has sloughed, or some other untoward circumstance has occurred to mar the success of the treatment.

"For several of the latter years of the tenancy of my office of surgeon to the hospital, I adopted, in these and similar cases, a new principle of treatment far more efficacious than that I have described. This principle requires a few words of explanation. If you observe the healing progress of an ulcer, be it where it may, you will not fail to notice the gradual declension of healing power the wound exhibits as it advances, so that an ulcer of four inches diameter requires for the last inch as much time to heal the entire wound as has been occupied in the healing of the previous three inches. It would appear that the curative or healing action became exhausted, and the progress toward complete cicatrization in the same degree retarded. It is this tardy progress in the healing process of wounds that explains the condition of these singular cases, and renders them so difficult of control. Almost every description of open wound, as you well know, heals from the margin. There are exceptions to this natural law in the case of old phagedænic ulcers, in which an island of cicatrization forms in the midst of the granulations; but I do not recollect to have seen this feature in any common wound. The healing power of a wound is in a relation with the extent of its margin, a wound of four inches square having a healing margin, and therefore a healing power, of sixteen inches. Divide this wound into four, of one inch each, and you have a healing margin of sixty-four inches. Again divide it, in theory I mean, and you have a margin of one hundred and twenty-eight inches. Now, if the fact I have stated be true, that the healing process of wounds is retarded at every step it takes, you will readily see that the smaller the wound the more rapid the healing process; and, if instead of one large wound, you make twenty small wounds, the healing process is completed with great rapidity, and the evils attendant on these large cicatrices may be removed by very simple means—viz., the relaxing the tension caused by these bridles by making a large number of small divisions of the cicatrix instead of one large one. Carrying into execution this principle, I have treated these cicatrices by small incisions in various parts of the body for some years. In my first case, in which the thumb of an in-door patient was attached to the index finger, which had resisted various efforts to permanently dissever it, I fixed the thumb in full abduction by some slight mechanical agent, and then made about eight to ten incisions through the skin and subjacent tissue, each incision not exceeding eight

or nine lines in length. In ten days the man had perfectly and permanently recovered the entire use of his thumb. I then adopted the principle on a larger scale in the neck and at the elbow-joint, and I am quite satisfied of its soundness. I believe the smallest possible margin to each wound will suffice for the cicatrizing process, and the incisions should be made with all caution that they do not run into each other."

—

Air in Wounds.—"Mr. Skey expresses very reasonable doubts of the injurious influence of atmospheric air in wounds. In the case of compound fractures, he attributes the slowness of the healing process, and other untoward symptoms, rather to the laceration and contusion of the structures than to the admission of air; adding, that in operations for empyema and hydrothorax he has never made any attempt to exclude air, and quoting one case in which he and the late Dr. Todd intentionally admitted air enough to take the place of six pints of serous fluid, without the slightest evil result."—(*Med. Gazette.*)

—

Illumination of Binocular Microscopes.—Dr. R. H. Ward, at the late meeting of the American Association for the Advancement of Science (*Amer. Chemist*), "after reviewing the usual methods of illumination of transparent objects, showed the difficulty of applying them to the binocular instrument, and suggested means of removing the difficulty. He proposed a horizontal slit in the diaphragm, either of fixed or of adjustable width, to be used either with or without the achromatic condenser, through which both fields can be illuminated with great facility, with objectives as high as 110 degrees. The length of the slit is to be controlled by the graduating diaphragm which every microscope should be provided with. Or a black stop may be used with two apertures at an adjustable distance from each other, for the same purpose. Both these methods are greatly superior to the spot lens sold for the purpose, or the achromatic condenser with small black stop, which can be used."

—

Spectroscope, New Form of.—"The Bowdoin *Scientific Review* describes a simple device hit upon in the laboratory at Brunswick, specially adapted to blow-pipe determinations: 'If the lenses be removed from an ordinary spectacle frame, and one of them be replaced by a very small direct-vision spectroscope, we have the instrument in question. The direct-vision spectroscope may consist of the following parts: a compound prism consisting of one flint- and two crown-glass prisms, suitably united, and an achromatic lens, all properly mounted in a small tube having an adjustable slit exactly in the focus of the achromatic lens. This instrument may be worn like ordinary spectacles; thus releasing the hands of the operator for necessary manipulations. By this device we are enabled with one eye to study the spectrum, while with the other we direct the operations necessary to its production.'"—(*Boston Journ. of Chemistry.*)

—

"'*Wax Milk.*'—This name was given by the late Dr. F. F. Rung, of Prussia, discoverer of the aniline colors, to a valuable water-proof compound which is used for imparting a polish to wooden articles and for coating packing-papers. It is made by dissolving twelve parts of carbonate of potash in ten times their weight of water; this is heated

to the boiling-point, and four parts of yellow wax are then gradually stirred into it. When the ensuing effervescence has ceased, 120 parts of water are added, and the liquid is again heated until it assumes the appearance and consistency of milk. The composition may be further improved for some purposes by first melting common rosin with the wax; the compound thus made is more tenacious and flexible than any with either common rosin or wax alone. Wood coated with this mixture will bear washing with cold water, and on being rubbed will assume a fine lustre. The mixture may also be used for protecting statues and architectural decorations."—(*American Artisan.*)

Gold and its Compounds, Experimental Researches on. By J. P. Prat. (*Journal de Pharmacie et de Chimie* and *Chem. News.*)—"The main results of the author's experiments are, that nitro-muriatic acid chlorurizes gold in various degrees, and that this depends upon the composition of the acid, the quantity which is applied in reference to the gold, and the degree of heat; that pure gold can be readily and rapidly prepared and obtained in a spongy state; that gold can be directly oxidized and salified by oxacids; that there exists a liquid and volatile chloride of gold containing more chlorine than the sesquichloride; that there exist, likewise, a sesqui-iodide and a carbonate of gold; that there exist two oxides of gold capable of giving a new series of salts; and, lastly, that gold behaves in many instances like some of the other metals."

Metals as Fuel.—"An Englishman would substitute metals for coal as fuel for ocean steamers, and has patented his method, claiming that by it a larger amount of steam can be obtained from a given quantity of fuel. The theory is as follows: in combustion a large amount of coal is turned into gas, much heat becomes latent and goes to volatilize the solid. When zinc, iron, or manganese is burned, the resulting oxide is a dense solid, and but little heat is wasted, as vapor is not produced. The result of obtaining the cosmical heat latent in the atmosphere is that one pound of zinc will vaporize more than quadruple the amount of water that a pound of coal will turn into steam, and the oxide of the metal may subsequently be readily reduced. It is well known how small a proportion of coal compared with iron is used in the furnaces of iron foundries, where the partial combustion of the iron itself increases the heat produced by the combustion of the coal. The invention apparently rests on strict scientific grounds."—(*Jour. of Applied Chemistry.*)

"*Mixture for Cleaning Silver.*—Common prepared chalk, or whiting, $\frac{1}{2}$ ℔; gum camphor, $\frac{1}{4}$ oz.; aqua ammonia and alcohol, of each 1 oz.; benzine, 3 oz.; mix well together, and apply with a soft sponge, and allow it to dry before polishing."—(*Ibid.*)

Colored Cements which harden rapidly, Preparation of. By Dr. Bœttger. (*Journal für Praktische Chemie* and *Chem. News.*)—"The author takes a solution of silicate of soda (sp. gr., 1·298), and adds to it, while stirring, first pulverized and previously washed, lixiviated chalk, so as to form a thick mass, like butter, to which are added, for coloring purposes, the following substances: finely-pulverized sul-

phuret of antimony for black, iron filings for gray, zinc dust for whitish gray, carbonate of copper for bright green, oxide of chromium for deep green, cobalt blue for blue, red-lead for orange, vermilion for bright red, and carmine for a violet hue. This cement hardens within from six to eight hours, and may afterward be polished, becoming like marble."

"*Elastic and Sweet Glue.*—Good common glue is dissolved in water on the water-bath, and the water evaporated down to a mass of thick consistence, to which a quantity of glycerine, equal in weight to the glue, is added, after which the heating is continued until all the water has been driven off, when the mass is poured into moulds, or on a marble slab. This mixture answers for stamps, printers' rollers, galvano-plastic copies, etc. The sweet glue, for ready use by moistening with the tongue, is made in the same way, substituting, however, the same quantity of powdered sugar for the glycerine."—(*Sci. Amer.*)

Cleaning Brass.—The *Sci. Amer.* gives the following recipe for cleaning brass: "Rub some bichromate of potassa fine, pour over it about twice the bulk of sulphuric acid, and mix this with an equal quantity of water. Don't apply it with your fingers. The dirtiest brass is cleaned in a trice. Wash immediately in plenty of water, wipe it, rub perfectly dry, and polish with powdered rottenstone."

"*Turbine for Sewing Machines.*—A German machinist has lately invented a simple turbine wheel, as a motor for a sewing machine. This is said to occupy a very small space, and to be very easily attached to any hydrant or water pipe. As constructed by him, it is one foot wide and six inches high, composed of brass and iron, protected against rusting, and inclosed in a case. The apparatus moves without noise, and scatters no water, so that it can be as well placed in the parlor as in the workshop. The transfer is effected by means of belts, and the cost of the article is only about $10.—(*Phila. Ledger.*)

BIBLIOGRAPHICAL.

The Physician's Visiting List for 1871. Twentieth year of its publication. Philadelphia, Lindsay & Blakiston.

This popular manual is issued in the usual neat, compact, and convenient form.

A Descriptive Catalogue of the New Sydenham Society's Atlas of Portraits of Diseases of the Skin. Compiled at the request of the Council, by Jonathan Hutchinson, F.R.C.S., Hon. Sect., etc. Part I. The New Sydenham Society, London, 1869. From Lindsay & Blakiston. The New Sydenham Society, "instituted for the purpose of supplying certain acknowledged deficiencies in the existing means of diffusing medical literature," has published many valuable works, among which is an Atlas of Skin Diseases, in numbers, though not yet complete. This catalogue contains, besides illustrative portraits and descriptive letter-press of cutaneous disorders, a list of books already published, with the names of officers and the laws of the Society. It is of much practical interest to physicians and dermatologists.

THE

DENTAL COSMOS.

NEW SERIES.

Vol. XII. PHILADELPHIA, DECEMBER, 1870. No. 12.

ORIGINAL COMMUNICATIONS.

NERVE FIBRILS.

BY S. P. CUTLER, M.D., D.D.S.,

PROFESSOR OF CHEMISTRY AND HISTOLOGY IN THE NEW ORLEANS DENTAL COLLEGE.

Read before the New Orleans Dental Association

In the report of the proceedings of the American Dental Association at Saratoga, as published in the Dental Cosmos for October, 1869, on page 523, the speaker, Dr. Judd, said:

"Beale saw that the terminal of the nerve fibre, as described by his predecessors, was really not a terminal point, but only the point where it breaks up into an infinite number of fibrils in the germinal matter of the pulp. Now, there is room in the dentinal tubules for whole plexuses of these minute fibrils, and it is reasonable to suppose that they enter the tubules in common with the germinal matter—the tubules measuring $\frac{1}{10000}$ of an inch, while these minute nerve filaments are but the $\frac{1}{100000}$ of an inch. * * * Beale has enunciated the doctrine that there are no terminations to the nerve fibrils, but, like the electric force, their circuit is continuous, so that there is no break in their attachment to the nervous centres."

Beale thinks there are no terminal points, but that the supposed terminal points of fibres, *as was formerly conceived*, break up into an infinite number of fibrils in the germinal matter of the pulp.

Does Dr. Beale prove the above statements, or give his mode of investigation beyond the simple statement that it is so?

Does Dr. Beale give these statements as dictum or postulatum?

What disposition does he, or do his followers, make of these terminal fibres after breaking or splitting them into infinite numbers?

What does Dr. Beale do with these infinite numbers of nerve fibrils in the germinal matter or pulp substance, and what proofs does he give for his assertions, or his followers? Have they given us any microscopic facts to sustain fully these assertions? If so, I have not seen them. Dr. Beale's assertion, that the nerve fibres break up into infinite numbers of minute fibrils in the germinal matter of the pulp, is simply a

mistake, without any microscopic facts to support such an hypothesis, —as it can be regarded as nothing more nor less.

Dr. Beale is deservedly high authority in microscopic science, but, like other men, he is liable to err sometimes, and this is one of the times.

On the same page the speaker says: "Suppose these minute fibrils to pass, along with germinal matter, into tubuli, as their size is sufficiently large to admit whole plexuses of these fibrils or fibres." But he does not claim that plexuses do exist in the tubes, but that they enter the tubes with germinal matter, thereby presupposing the formation of tubes first, and subsequently, entrance of innumerable fibrils, along with germinal matter, into each and every tube What does the speaker mean when he speaks of the entrance of fibrils, along with germinal matter, into the tubes? What particular period of tooth formation does he assign for this all-important event to take place? What does he mean by germinal matter?—does he mean the protoplasm of Virchow and Huxley, the proteine of Prof. Liebig, the formative material of others, blastema, etc.?

I might inquire, what need is there of germinal matter entering the tubes with already formed fibrils? If I understand the use of germinal matter, it is to build or form tissue, and to repair, when necessary, any injury, or supply the ravages of waste which is going on everywhere in the organism at all times. Who has ever seen more than one solitary nerve fibril in a solitary dentinal tube? I boldly say no one ever did, or ever will, see such a sight. Every tube has a solitary occupant, and no more, which just about fills the tube, leaving no room for whole plexuses of fibrils. It seems that the speaker has somehow got the idea into his head that all nerve fibrils are about $\frac{1}{100000}$ of an inch in diameter, when the fact is this size represents nerve fibrils of almost the smallest dimensions. There are some exceptions in the terminal points of lateral fibrillar branches in the fangs of some teeth.

Nerve fibrils vary in size as well as other fibres—some are larger than others in the pulp; there are some not more than $\frac{1}{6000}$ of an inch, others not more than $\frac{1}{100000}$ of an inch in diameter, and any one can readily see the difference by examining a specimen of nodular pulp under a good instrument.

Let us reverse the order, and suppose the prior formation of nerve fibrils, and the formation of tubes around them, to suit the size and form of fibril. I cannot conceive of any other order of tooth formation. If we were to admit the fluid hypothesis which some still adhere to, we would then have to reverse the order as above conceived, and first form the dentine full of tubes in some unaccountable manner, then afterward fill them with liquor sanguinis, or water, as tubes could not be formed around a fluid at all.

The minute lateral fibrils in the fangs of some teeth number millions,

and have a regular taper to an infinitesimal point, ending apparently in the intertubular spaces. In saying there are millions, I am only guessing; in this instance they are beyond all calculation.

The speaker further said that Beale had enunciated the doctrine that there are no terminations to the nerve fibrils, but that, like the electric force, their circuit is continuous, so that there is no break in their attachment to the nervous centres.

In the above statement we are led to infer the anastomosis of efferent and afferent nerves, or motor and sensorial.

Does Dr. Beale prove his hypothesis—as I cannot regard it as anything more—by demonstrations or positive data? His analogies I shall attempt to disprove by deduced facts.

Let us, for instance, take the tubular fibrils of the crown of a tooth, and see if we can find any anastomosis.

When a specimen of crown dentine is properly prepared for the microscope, each visible tubule has a clear and well-defined solitary terminal point at the base of the enamel, or just in its substance, in some instances, and in no instance can there be found any anastomosing or looping at all—there being no exception to this rule, as is generally the case. At the junction of the dentine and enamel there is apparently the remains of a former membrane, which may, in some manner, serve as a connecting link between the nerve fibrils, thereby establishing Beale's neural circuit. This would answer for Beale's analogy, and give us room to drop the anastomosis dogma. In the next place, what would be the use of any anastomosis of nerves of the same denomination, as they can only carry or convey impressions or forces in one direction?—in cases of the nerves of teeth to the brain, not from it; hence there can be no need of any anastomosis at all, or circuit.

In the teeth we have the most favorable field for the study of neural phenomena, as we can clearly trace and follow the fibrils to their ultimate termination unincumbered by flesh, they being incased in solid ivory canals

Dr. Beale somehow or other misinterprets the magnetic circles, as also their analogy to neural circuits.

Let us investigate electrical and magnetical phenomena according to our present light and knowledge. Take the telegraph, and make the circuit and connections perfect, and there is, theoretically, a regular current, making regular circuits continuously, but no recognizable disturbance so as to convey any impression; but the instant there is a break in the connection, and again contact, an impression is sent over the wires which is felt at the opposite end at the same instant, and then ceases, until the same thing is again repeated. The same law holds good in all galvanic experiments: so long as there is a regular, continuous, undisturbed current, there is no disturbance, only at the zinc surface of the battery, where the force is developed.

Before any phenomena in galvanism in any form can be produced there must be terminal ends, and then some dissimilar media intervening, so as in some way to intercept the evanescent current—which may be done, in the case of the galvanic battery, by separating the poles, and introducing them into a vessel of water, not so as to touch; and water is decomposed, and gold and silver solutions are made to cover metallic articles uniformly. In the same way, by introducing charcoal between the divided ends of the poles, intense heat and light are produced; by the magnetic force becoming heat force chiefly. In case of the introduction of a very fine platinum wire, a portion of the electric force is, by the interruption, converted into heat force, and the wire becomes white-hot, and powder may be ignited, as in case of Colt's submarine battery, where the main conducting wires are not heated in the least, or in any way appreciably disturbed.

I might make similar explanations in relation to static or frictional electricity, but I will only mention the glass machine; in that experiment the electric force is indefinitely held unless some suitable conductor be brought within a certain distance, when the force leaps to such conductor across the intervening space,—causing a spark and a report, it being negative, while the charged machine is positively electric. Now, where sharp-pointed metallic rods are kept within certain distances when the machine is in motion, these points regularly conduct away the force, if in connection with the earth, and no recognizable phenomena are manifested; but when insulated, electrical excitement will be apparent, but no sparks.

The Leyden jar and prime conductors might be noticed if any further explanations were necessary.

Now, in the case of nerves, all physiologists know that sensorial nerves are distributed to the skin and all serous surfaces and fascias; the moto-nutrient nerves are distributed to all mucous surfaces and muscular fibres. It is not always the case that these tissues so supplied are in intimate proximity; hence it is but reasonable to conclude that the intervening substance or flesh serves as connecting links, producing the requisite neural phenomena. It is believed by many that these branches actually pass through from the one set to the other, so as to complete the neural circuit; such is the belief of Dr. Beale, no doubt. I do not say positively that they do not anastomose; neither have those who believe it absolutely demonstrated the fact in all cases, if in any, by the microscope. These are still mooted points. We find blood-vessels anastomosing, as the blood has to be carried through tubes, and not on the surface, as we may reasonably conclude is the case with neural circulation, from its analogy to that of galvanic and electric phenomena. We might reasonably conclude that nerves terminate in cells of other tissue, the cells constituting the connecting link, or vin-

lum; this, however, is only speculation. In the discussion before quoted from, another speaker said he differed in some respects from the opinions advanced by the former speaker in relation to the character of the dentinal fibrils, and that Tomes directed attention to the fact that dentinal tubules are occupied by fibrilla, and Beale concurred in that view, while the former was disposed to regard them as nerve fibrils. Neither of them asserted them to be such. Beale indeed has spoken of them as germinal matter from which the formed material or completed tissue is made.

The speaker before quoted had seen these fibres in examining pulps, but was disposed to think they were fluid rather than solid during life, and that their solidity under the microscope was due to a change after the removal of the tooth, like the change in the blood by coagulation; that we have liquor sanguinis present in the pulp; therefore he advanced this view suggestively, as it is impossible to demonstrate the fluidity or solidity of the contents of the tubules during life, because the structure can only be examined *post mortem.*

Tomes certainly did not regard dentinal fibrils as nerve fibrils. This is what he says, on page 327, edition of 1859, of his work; stating that he was unable to determine the manner in which the dentinal fibrils terminate in the pulp; that in favorable specimens they may be traced a short distance into the pulp; but whether they are terminal by cells, or in any way connect with nerves, he was unable to say. Mr. Tomes does not anywhere in his work claim that dentinal fibrils are true nerve fibrils. See quotations from his work by myself, read at the Niagara meeting.

The last speaker thought it impossible to determine whether tubular contents be fluid or solid, as they can only be examined *post mortem.* I would here ask, whether or not any specimen can be examined during life? Are not all prepared specimens for the microscope *post mortem*, except it be the examination of the circulation, in a few instances, as a frog's foot, tadpole's tail, or bat's wing, etc.?

Of the idea of liquor sanguinis forming fibrils in the tubuli, it seems to me there is no proper data for any such conclusions, as eight-tenths at least of it is water, which escapes by desiccation, leaving scarcely a trace in the liliputian tubes; and the idea of a fluid conveying sensation, or even any fluid of the body or any tissue, except true nerve fibril, lacks proof to sustain it. I do not doubt in the least the sincerity of those who entertain those ideas. I am not censuring any one for any opinions advanced at the Saratoga meeting; only I differ with some of the ideas there advanced by men high in the profession, and deservedly so too. I only beg the privilege of entertaining different views, and that on the most amicable terms on my part; I am only seeking truth, nothing more. I am well aware that when I take issue, and advance

opinions, or make statements in opposition to those advanced by such authority as Dr. Beale and many others of that school, it should be done with due consideration. But science is progressive, and no one has yet reached the limit of discovery; and where Dr. Beale and others leave off is the starting-point for others to begin,—the same as he and others did and are doing to-day, and will continue to do so long as science is cultivated.

ALKALIES AND ALKALINE SALIVA—THEIR EFFECT UPON THE TEETH.

BY E. H. NEALL, D D.S., PHILADELPHIA, PA

Read before the Odontographic Society of Pennsylvania, Oct. 5th, 1870.

The few thoughts that I have to lay before you this evening are more in the nature of questions, that may introduce a subject which is equally of as great importance to the conscientious dentist as to his confiding patient.

In these days of dental progress it is necessary that the operator on the teeth should not only be expert to remedy the defects of nature, accident, and decay, but that he should always be able to give intelligent answers to any inquiries with regard to the profession of his choice.

To the standing question of "What causes decay of the teeth?" does the ever ready answer, that the exciting causes are vitiated secretions of the mouth and stomach, great and sudden changes of temperature, decomposition of food in the mouth, especially the use of acids, either as food or medicine, etc., cover the whole ground?

Do we not daily see patients who take the greatest care to thoroughly cleanse all particles of food from the teeth, who abstain nearly entirely from the use of acids for their teeth's sake, and yet whose teeth are continually breaking down—not, however, from the loss of the earthy, but rather of the animal part, leaving a residue that is chalk-like in appearance? This is certainly not the effect of an acid. May it not be caused by an undue alkalinity of the saliva? Our text-books are remarkably silent on this point. Dr. Taft, in his excellent treatise, devotes but three lines to it,—some other writers pass it by entirely,—whilst many pages are given to prove the disastrous effect of acids on the lime of the teeth. Dr. Taft's words are: "Alkalies will act upon the animal portion of the dentine and remove it; and in caries thus produced, the residue is friable and chalk-like." Again, in a general view of the action of caries, he says: "But any agent possessed of sufficient energy to decompose the dentine will destroy its vitality. What is that decomposition? Either a lack of vital power to maintain the integrity of the organic structure, or the action of some agent having an affinity for a certain part of the dentine more potent than that vital

power: in either case the vitality is destroyed." In view of the foregoing, is it not probable, that in cases of excessive alkalinity of the saliva, the alkali may have an affinity for some part of the dentine more potent than the life force?

Mr. Piggott, in his work on Dental Chemistry, says: "Alkaline saliva differs little in external character from healthy saliva." And further states that "neuralgia, and nervous disturbance generally, have a remarkable connection with alkalinity of the saliva. In neuralgia, nervous toothache, and earache this alkalinity is observable, especially on the affected side. Nervous disorder of the stomach, liver, and other remote organs are also subject to the same law. Epilepsy is also accompanied by alkaline saliva, in some instances so decided as to impart an unpleasant taste to this liquid. In hysteria the discharge sometimes amounts to ptyalism; it is of a low specific gravity, limpid, and feebly alkaline. In the excitement or exacerbation of mania the saliva is frequently in a state of morbid alkalinity."

Experiments with teeth exposed to the action of strong alkalies may not result satisfactorily in breaking down the tooth structure, probably from the same cause that protects a tooth out of the body from being acted upon by a dilute acid.

Mr. Tomes terms "caries a chemico-vital act, which can only occur in living organized structures." It is well known that alkalies, when taken into the mouth, have the same effect as acids, giving the peculiar sensation described as "setting the teeth on edge."

In conclusion, with all this weight of evidence that the saliva is often unduly alkaline, overpowering the acidity of the mucus, and attacking certain parts of the dentine, causing a loss of its animal constituents, may it not be wise, in such cases, to prescribe the free use of fruits and vegetables? Even lemons and pickles might be advantageously employed as a means of neutralizing the excess of soda (which is the alkali peculiar to the saliva). And may we not class the use of alkalies in articles of food and medicine as one of the exciting causes of decay of the teeth?

NECROSIS AND REMOVAL OF A PORTION OF THE BODY AND RAMUS OF THE INFERIOR MAXILLA.

BY J. H. M'QUILLEN, M.D., D.D.S.,
PROFESSOR OF PHYSIOLOGY IN PHILADELPHIA DENTAL COLLEGE.

In the fall of 1868 a child, aged about seven years, was brought to my office by her father. Her face, on the right side, was very much swollen around the base, angle, and ramus of the jaw, with a fistulous opening at the most dependent part. On examining the mouth the gums were found in a swollen and spongy condition, and bleeding freely on the slightest touch. The health of the child was very much de-

ranged; her complexion was quite sallow, and she presented generally a decidedly emaciated appearance. On asking for a history of the case, I was informed that one of the deciduous molars had caused considerable trouble some months before from periodontitis, followed by alveolar abscess; the tooth was removed by a fellow-practitioner residing in the lower part of the city. Subsequent to this the face assumed the swollen condition, with the fistulous opening and discharge of pus. The parent was not conscious of the employment of any mercurial preparation in the treatment of infantile affections which the child had passed through in its earlier years, nor had she been in the habit, to his knowledge, of chewing matches dipped in phosphorus. Questions calculated to draw forth such answers were put to him, as I recognized, on passing a silver probe into the external fistulous opening and another observed in the gum, that a considerable portion of the alveolus and body of the bone was denuded of the periosteum and in a necrosed condition; at the same time it was found quite firm, proving that the dead and living portions were still connected with each other. Recognizing that meddlesome surgery is a bad thing, and convinced that the practice which prevailed in former times of making applications of mineral acids, nitric, muriatic, etc., with the view of hastening exfoliation, was calculated to do more harm than good, the parent was informed that we should have to await the operations of nature in effecting a separation between the dead and living portions; and that any rough procedure, such as that named above, or cutting or tearing away the dead portion, would be likely to rather extend than limit the disease; that it was all-important that the child's health should be improved by giving her the most nutritious articles of food, such as broiled steaks, chops, etc., and a limited quantity of good sherry wine every day, with plenty of exercise in the open air. To correct the fetid secretions of the mouth, a wash of

℞.—Tinct. myrrhæ, f℥i;
Potassæ permanganas, grs. xv;
Aqua fluvial, f℥v,

was directed to be used two or three times a day.

I saw the child repeatedly within the period of a month, during which the general health was somewhat improved; and at the expiration of that time a portion of the alveolus, including that which had been occupied by the two deciduous molars, having become loosened, was removed with the forceps, bringing with it the crowns of the two bicuspid teeth. After this there was some local improvement; the discharge, however, still continued, and the gums remained in a spongy condition for about a year. During the fall and winter of 1869, and the succeeding spring of 1870, she visited the office about once a week. At this time the extended character of the necrosis became quite evident, involving about one-half of the body and ramus of the right side; still trusting

to nature, therefore abstaining from all heroic treatment, but yet desirous of expediting the exfoliation by gentle stimulation, I applied lint, dipped in tincture of iodine, between the gum and the dead bone every day or two, continuing this treatment for two or three weeks. This stimulated the absorbents, and at the end of that time, finding that the dead bone was quite loose, the child was placed under the influence of ether, and the soft parts covering the ramus in front were dissected away; the necrosed portion was then seized with a pair of forceps and readily removed, bringing away the posterior half of the body of the bone along with the greater portion of the ramus, also the first permanent molar and the undeveloped crown of the second molar. The hemorrhage attendant upon the operation was slight, and readily checked by an application of tincture of erigeron. The parts were dressed with lint, and the child dismissed. Subsequently the fistulous discharge which had continued prior to the operation speedily ceased, and the swelling of the soft parts disappeared, leaving the face with slight evidence of deformity, as new bone had been formed in place of the old. The child now (six months since the performance of the operation) is in the enjoyment of perfect health, and, it is reasonable to infer, not likely to have a recurrence of the difficulty.

BLEACHING TEETH.

BY THOS. C. STELLWAGEN, M.D., D.D.S.,
PROF. OF OPERATIVE DENTISTRY AND DENTAL PATHOLOGY IN PHILADELPHIA DENTAL COLLEGE.

Of the three kinds of structure that make up the teeth, the discoloration is only treated when the enamel or dentine is concerned. The first, from the compactness of its prismatic cells, is seldom more than superficially stained, and is of course more readily cleaned than the second. The discoloration is only of moment where due to chemical dyes, which generally result from substances taken into the mouth, as food, medicine, or by accident; tannin from any of the above may be united with iron by the contact of a steel or iron instrument, forming the tannate of iron, or in common parlance, ink. To remove a stain having this metal for its base, a piece of fresh lemon-peel, or acid fruit, will answer; but oxalic acid might be used if cautious to wash thoroughly, as the color will return upon immersion in an alkali, and the acid is injurious to the teeth. Milk will also wash out many ink stains.

Another discoloration that is removed by fruit acid, is that from a solution of permanganate of potassa, which sometimes is employed diluted as a mouth-wash.

The vegetable colors are due to compounds of hydrogen, and with this the chlorine from the solution of chlorinated soda (Labarraque's)

will unite, destroying the color and forming chlorohydric acid. Two drops will be sufficient for a single application, and it is most conveniently used on a small pledget of cotton-wool or lint. *Chlorine is very irritating to the mucous membrane if inhaled.**

The dentine, from the difference in the structure, being filled with tubuli, will require more time, as it is essential to permeate these and rid them of the color. It will often be necessary to dissolve out such matter as may have hardened therein, so that we cannot expect so speedy or complete a change. To do this, the mouths of the tubuli must have the fluid or gas applied to them; and it must be remembered that those running to the necks of the teeth have their openings into the pulp cavities somewhat nearer the apices of the roots. The application of any substance that is irritating, as many of those used are, might produce inflammation of the pericementum by passing out at the apicial foramen, and hence it is often necessary first to treat the tooth and fill the upper third of the pulp cavity with a material that the bleaching cannot permeate or destroy,—gold being the best of those at present in use.

To dissolve out the discoloring matter in the dentinal tubes, there is nothing so generally useful as clean water, either cold or warm; the former often purifying better than the latter. This is accomplished by repeatedly washing with a jet from a syringe, and allowing it to soak thoroughly for a half hour or more.

Water, although an almost universal solvent, will not do in all cases; and it is important to review the possible causes of discoloration of the dentine.

Any of the dyes spoken of before may affect the dentine through a cavity of decay, and in addition, we may find the hematin, or coloring matter of the blood, and the oxidation, or decomposition of substances used as fillings. The former is supposed to be due to iron; and of the latter, most commonly, the silver, tin, mercury, lead, rarely bismuth or cadmium, and at times iron or copper. The list of metals above mentioned seems large, but they have all been used, although now we generally confine ourselves to the first four. A broken instrument, or a piece of a broach, may be allowed to remain in a cavity, or iron, like copper, may be introduced as impurity in amalgam.

To take away the deposit in the tubules, it may be necessary to acidulate the water, and most of the metals and their oxides yield to well-diluted nitric acid. It should be removed immediately, as directed by Dr. W. H. Trueman, at a meeting of the Odontographic Society, and any remaining after should be neutralized by an alkali,—chalk or ammonia-

---

* See an article by Prof. J. H. McQuillen, in the DENTAL COSMOS for April, 1867, p. 457.

water being good; the latter perhaps preferable, since the vapor will permeate the tubules and produce the effect.

Where blood has been recently clotted it can again be rendered fluid by ammonia, and thus it assists in dissolving it from the pulp cavity.

The stains of iodine are almost instantly destroyed by washing with the same preparation.

In using oxalic acid in a tooth, it has been recommended to put in dry crystals and add the water while in the cavity, but it often is more readily applied as a solution on cotton-wool.

Cyanide of potassium has been recommended; *but it is so poisonous that great caution is required to prevent it from being absorbed by an abraded surface;* a particle not larger than an ordinary pin's head, dissolved in a drop of water, is as much as should be used, and wherever it has been employed the part should be thoroughly washed afterward.

For chemically cleansing the hands, if the skin is unbroken, a piece the size of a pea may be rubbed over them with a little water; this readily removes the stains of chloride of gold and nitrate of silver.

Finally, when the bleaching process has been completed as far as possible, the tooth should be completely dried before filling. The rubber dam and hot air syringe are essential to obtain the most perfect results in the latter step.

A CURIOUS FREAK OF NATURE.

BY CHAS. L. HOUGHTON, POUGHKEEPSIE, N. Y.

I EXAMINED this morning the mouth of a young lady of eighteen, and found that the right and left laterals had, by some curious freak of nature, entered into a "limited partnership,"—the left lateral having forsaken its place on the left side and joined the right, between it and the central. The teeth were perfectly well formed and separate, except the roots, which were united. There were two distinct nerves. I do not think it could have been a supernumerary tooth, from the fact that there had never been a lateral on the left side; and the teeth had the appearance of *right* and *left* laterals. The young lady's mother informed me that the deciduous lateral was absent on the left side, and had joined the right lateral the same as the permanent. The cuspidati on both sides were sound and healthy,—that on the right side erupting over this *double tooth.*

Speaking of irregularities, my own case is rather curious. My superior cuspidati, instead of being in their true positions, are next to the molars. I have no bicuspids in the superior maxillary, with the exception of one small bicuspid on the left side, between the cuspidatus and the lateral incisor. In the inferior maxillary I have but two bicuspids, one on each side; and immediately behind them, and in the place of the second bicuspids, are the deciduous molars. My other teeth are perfectly regular and sound.

AN OPERATING STOOL.

BY H. C. REGISTER, D.D.S., PHILADELPHIA, PA.

The position to be assumed by the dentist in many operations upon the teeth is not a small matter when the length of time he is required to maintain it is taken into the account.

If the position is an unfavorable one, the result is backache, chest pains, nervous prostration, dyspepsia, sleeplessness, and, if too often repeated, a premature grave.

Besides, in order to give the patient the benefit of all the attention and concentration of thought, and the best manipulative skill of which one is capable, it is necessary that the operator should himself be in comfortable circumstances. A constrained or painful position must, therefore, necessarily detract very materially from the desired result.

To assist in maintaining an easy and comfortable position I have been in the habit, for some months, of using an ordinary desk stool when operating upon the superior arch, and find that I can thus avoid putting myself into the shape of a corkscrew, as was often necessary when trying to perform the same operations in a standing posture. I now use the sitting posture in fully eighty per cent. of all operations upon the superior arch, and find myself at the close of a day's steady work very much less fatigued than formerly. I usually bring the tooth to be operated upon either parallel to or a little above the eye as I sit.

A trial of this plan will be all that is necessary to make an operating stool a permanent fixture in a dentist's office.

MISCELLANY.

ABSTRACTS AND SELECTIONS.

BY. J. W. WHITE.

British Journal of Dental Science.

"Chloral Hydrate in the Treatment of Sensitive Dentine." Dr. James Hinds says of this agent:

"I have treated a great number of cases during the last four months, some of them remarkable for their extreme sensitiveness. I apply the salt, *per se*, on cotton-wool, using it freely over the exposed dentine, and sealing it in with a solution of mastic or sandarac in the usual way. As there is no possibility of the slightest injury resulting from its use, I direct my patients to allow it to remain in the cavity for two or three days, unless a relapse of pain should occur, when I request they will see me again without delay. Its use, so far, has been attended with much pleasure and success, as we all know the great repugnance felt by numbers to the use of creasote, and until the employment of chloral hydrate I have never been able to dispense with its use in any case.

I do not expect that we shall ever have a perfect substitute for creasote; but I feel sure that where its use is highly objectionable, chloral hydrate may be employed as a mediator between patient and operator."

Mr. Henry Moon, Assistant Dental Surgeon to the Dental Hospital of London, reports the following case:

"Emma Lock, aged seven years, came to the Dental Hospital on the 25th of July with a tumor in the incisive region of the upper jaw. Her right upper permanent central incisor was fully erupted, and the space for the corresponding tooth of the left side was occupied by a tumor which had been three or four days in forming, and was hemispherical in shape, and extended as low as the cutting edge of the right incisor. The presence of the left central incisor beneath the gum could be distinguished, small congested veins were to be seen on the surface of the tumor, which was evidently cystic, although the extreme tenseness, and the thickness of the mucous membrane covering it, made it almost simulate a solid growth. An incision being made, a dark-yellow serous fluid escaped, and the cutting edge of the coming tooth, covered with enamel, was clearly felt. This tumor, in fact, seems to have been a 'dentigerous cyst,' uninclosed in bone."

Canada Journal of Dental Science.

"Drying Cavities." Dr. J. H. Webster writes:

"I have a simple way of insuring the removal of every particle of moisture from a cavity, previous to introducing the filling, which may not be original, but which I am sure is not generally known, and which I know to be most effectual. I have used cotton-wool, bibulous paper, and punk, but I suspect that none of these remove the moisture entirely.

"After drying as well as usual with either of the above, I dip a pledget of cotton in chloroform or alcohol, and wipe out the cavity. If not too much is used, it will evaporate by the time you are ready with your gold; but it is easy to absorb absolutely every particle of moisture by another dry pledget. When the chloroform evaporates, the dentine is as dry as punk."

Dr. Beers writes editorially of the progress of the profession in Canada:

"Three years ago we in Canada had no moral or legal right to call ourselves a profession; there was no co-operation on any point, no association, and many regarded dentists as a nondescript sort of beings, something of a cross between quack doctors and boss carpenters.

"To-day dentistry in Canada is as legally a profession as medicine or law; public confidence in it is greatly increased; associations for mutual improvement meet regularly; boards of examiners test the qualifications of those who desire to practice, and the dental acts of incorporation of Ontario and Quebec confer a decided *status*, which cannot be mistaken."

Dental Register.

Dr. Knapp read a paper before the Indiana State Dental Association, entitled "What are the Indications for Destroying the Pulp?" In the discussion which followed, Prof. Taft said:

"An answer to the question under consideration involves a good deal. The indications are not always the same. There are many circumstances that will vary the indications. In the first place, the conditions of the patient in regard to temperament and health will modify the course of treatment that should be pursued toward an exposed pulp. No two persons physically have the same susceptibilities. Some, for various causes, are susceptible to influences others would not feel at all. The living tissue of the body will be very much injured in one case that in another would scarcely be felt. Inflammation will spring up in one person from a slight scratch or wound that another would scarcely feel and not notice an hour afterward. This difference of susceptibility we must regard in every case. The pathological condition of the person must be taken into account. Then the exposure of the pulp itself; the influences brought to bear upon it since its exposure; whether recently or a long time exposed; also, the location of its exposure, etc. Then the anatomical character of the tooth itself should be considered. And in order to treat the teeth successfully, it is necessary to have an accurate knowledge of their formation. In addition to all these things, and many others we might name, the operator should have confidence in his knowledge and ability in every direction. His manipulative skill and understanding constitute so many conditions as to what would be the proper course of treatment for him to pursue. It is not proper for all operators to pursue the same course. One course of treatment may be indicated clearly to one person, while quite a different one should be pursued by another. There are skillful operators who do not succeed in saving the pulps of teeth ordinarily as well as men with far less skill and knowledge, because the latter having stronger faith, will and determination to accomplish the object, make everything over which they have control bend to their purpose.

* * * * * * * *

"There should usually be but little interference with the teeth during times of great vital depression. In such cases, first impart strength and tone to the system, and secure all the advantages that may be derivable from such a condition. After that is accomplished, go to work carefully upon the teeth, always saving the pulps alive if possible. A great fault is that we too much ignore all these things, and don't try to examine and work through the whole subject.

* * * * * * * *

"When the pulp has been exposed for a considerable length of time, and been inflamed, and there is inflammation of the periosteum—where there is that complication, he did not think the pulp could ordinarily be saved. But that does not often occur,—periostitis and an inflamed pulp at the same time. Such cases are the most difficult to manage. Before resorting to arsenious paste in cases of that kind, he would endeavor to remove the pulp by an operation. He fears the influence of arsenic paste on it, for he had seen two cases in which the entire loss of the tooth took place. Where there is calcification of the pulps, there will be found little granules of calcific material occupying the upper part of the chamber; the upper part of the pulps will be converted into a granular mass; press upon that beyond, and pain will be experienced. Formerly he endeavored to remove this calcified part, which gave the patient a great deal of annoyance; but for a considerable length of

time he had not removed these at all, but simply removed all loose matter; then put in pledgets, moistened with creasote; cover this with *os-artificiel;* then fill with gold. He did not know whether that was the best way or not, but as yet he knew of no trouble having occurred in such cases.

* * * * * * * *

"Where the pulp has been inflamed for a considerable length of time, that of itself is not an indication for its removal. If the patient were in good health he would make an effort to save the pulp. He would apply anti-inflammatory preparations, and he knew he had succeeded in saving such cases. Then he contended the removal of the pulp by an instrument is not so formidable as many suppose. He would not run a barbed instrument into it, but a thin, smooth instrument, with sharp, slightly curved, cutting edge, that will not wound the pulp. Run it up to the end of the root, then turn it, and you will find the pulp cut off, in many cases giving the patient no pain. Sometimes it gives pain. Put cotton, saturated with chloroform, in the cavity for a few moments. Ordinarily he found no difficulty in removing pulps by an operation.

* * * * * * * *

"Dr. Burgess wished Dr. Taft to tell how he proceeded in case a person comes in with an aching tooth and you do not extract it nor destroy the nerve.

"Prof. Taft.—Where the patient is in a good condition otherwise, and there is simple inflammation of the pulp, examine it, clean out the cavity, free it from every impurity, then sometimes simply apply creasote; if the pain does not cease, apply carbolic acid and glycerin, sometimes spirits of camphor; sometimes nothing but glycerin. A variety of things may be applied. He did not remember a case of simple toothache he had not relieved in a few minutes. But there may be cases where there is a condition existing in which we cannot thus readily attain success. Where everything goes favorably for three or four days, the tooth may be filled Should the pulp be exposed and give some indications of pain, use occasionally nitric acid, touch to the point exposed, and go on and fill over that. The use of acetic acid in that way has been very successful. Sometimes chloroform will answer every purpose."

PROCEEDINGS OF DENTAL SOCIETIES.

ODONTOGRAPHIC SOCIETY OF PENNSYLVANIA.

A MEETING was held on Wednesday, September 8th, 1870, at the Philadelphia Dental College.

Dr. M. Lukens Long presented a lower second molar tooth, having a very fine specimen of osteo-dentine, the pulp chamber being entirely filled with it; also an upper cuspid root, at the apex of which was a deposit of salivary calculus. There had been a fistula of long standing, proving the opinions advanced by Prof. McQuillen, last February, that salivary calculus might be deposited at the apex of a root through such an opening.

A communication from Dr. R. G. Perry, of New York, was then read.*

Dr. Head understood Prof. Arthur to say that he separated from the palato-approximal angle, leaving the teeth in contact at or near the cutting faces, so as to allow the toothpick to pass freely between them.

Dr. Gilmour believed there was no stereotyped method that could be pursued in practice either in the direction of cutting, filling, or wedging, for the purpose of making difficult cavities more easily filled, or leaving what is called self-cleansing faces between teeth.

Dr. Trueman. The paper read before us to-night, taken in connection with the lecture of Prof. Arthur, a few months ago, is an apt illustration of the old adage, "that doctors sometimes disagree." We have all noticed the liability of approximal surfaces to decay, especially of the bicuspids, and generally agree that this is due to their peculiar shape,—the crowns being so much larger than the necks, leaving a triangular space or pocket between them, in which the food lodges, and decomposing, generates destructive agents. Prof. Arthur proposes to remedy this by changing the natural (as usual) shape of the teeth, removing the overhanging portion of the crown,—leaving a slight and, easily-cleansed space between them; and is so confident of success as to recommend this operation in teeth as yet unaffected by caries, if the condition of the other teeth leads us to fear any special liability to trouble at this point.

On the other hand, Dr. Perry contends that we should endeavor to *maintain* the natural shape of the tooth, and restore with contour fillings any portion lost by decay,—even *exaggerating* their peculiar shape by building out the crowns so that they may touch at one point, and thus keep them separate at the necks; and make this pocket as large as possible, trusting to the filling extending below the point of danger,—replacing the easily-injured tooth by a more resistant material. I cannot but think, while the idea may be plausible in theory, that it will not prove reliable in practice; yet it is well worthy of consideration. We are commanded to prove all things. In matters of this kind we must be guided by our own experience,—we do not all work or see alike, nor is it to be expected beings so entirely different, so richly endowed with reasoning powers, should do so. We aim to preserve the teeth, and make them as useful and *beautiful* as possible, and it is our duty to use those means which *we*, individually, in the exercise of our own judgments, think best.

From experience, I have been led to regard contour fillings as weak and unreliable. That it is possible to make the gold solid enough to hold its own there is no doubt; but, exposed as they are, presenting more

---

* See Dental Cosmos for Nov. 1870, page 561.

or less leverage to the force used in mastication, it is extremely difficult to anchor them with sufficient firmness to effectually and completely resist it. They are very often found, even after a short time, slightly dislodged, with a little space between the tooth and the filling, and may remain so a long time ; their condition not being suspected until decay has made extensive progress ; or, especially in bicuspids, where the filling extended to the gum, decay will set in below it, the overhanging portion concealing it until irreparable injury has been done.

When decay has set in, caused by the difficulty of keeping the teeth clean and free from accumulations of food, owing to the peculiar shape, it seems much more reasonable to remove, as far as possible, the first cause of the mischief while repairing the injury.

The food, packing between teeth thus separated, is very often an annoyance, but if it leads the patient to appreciate the value of a well-used toothpick, the good will certainly overbalance the evil.

In several cases, either the food or toothpick had caused considerable periosteal inflammation ; the trouble was relieved by making the V-shaped space more obtuse.

We speak of self-cleansing surfaces, but must remember that teeth will not clean themselves. We may assist, but cannot, by the exercise of any art, expect to relieve our patients of their part of the work. The constant and faithful use of toothpick and brush, the exercise of care and attention, is the price of sound teeth. They may deceive the poor dentist, but Madame Nature never fails to visit with promised and deserved punishment any infraction of her commands. A good honest toothache is very often an excellent "*educator*."

Dr. Eisenbrey is entirely out of conceit with the so-called contour system of filling teeth ; he has been forced to such a conclusion from experience with his own operations, and from observing the results of famous contour fillings of New York operators (who make a specialty of the system).

He recalls the case of three sisters, whose teeth made a fine display of such fillings, performed by the same operator, and who, unfortunately for them and the operator, had to replace them every year for three years, notwithstanding the superiority of such a system.

He (Dr. E.) replaced them one year ago, but not in the same manner as heretofore. He made free separations up to the necks of the teeth, but not through to the gums, and in such a manner that, after the teeth were filled, it would protect the filling, and not the filling the tooth. In the former case the tooth will be preserved by the filling ; while in the latter, the filling will be the means of fracturing and breaking the tooth, but not preserving it, as was intended.

The majority of teeth are in a sound and healthy condition, but,

owing to the close and crowded position in the mouth, and the impossibility almost of keeping them clean, their substance soon breaks down, from the presence of decomposed food and the constant abrasion occasioned by mastication.

When we find out the cause of a disease in any portion of our body, we remove it, and then the organ will regain its normal condition, if the destruction is not too great. Who, in the name of reason, when having broken-down teeth under his care, and knowing the cause of such a state, will put them in the same condition as before to preserve them? The cases that will admit of contour fillings and do well are very few.

As a rule, he prefers to have the teeth touch each other at a point near the gums, making the separation straight through from the labial and buccal to the palatine or lingual surfaces, rather than to separate entirely from the palatine and let the whole buccal surfaces touch, making a double V-shaped face. He thought that when teeth were so treated and filled they would be preserved for years.

The food that becomes impacted in the separation can be as easily removed in the one case as in the other, and far more easily than from between contour fillings. He thought with Dr. Trueman, that where food was retained between the teeth so as to cause discomfort, and make it necessary to remove it with a toothpick, it was a benefit.

Prof. Stellwagen had not changed his opinion of the practice of removing superficial caries. Daily the conviction as to its efficacy was confirmed, and yet he could not lay down rules which should govern all cases. He regretted to see the disposition in his profession to treat men as if they were mere machines, without the power of judging for themselves. The difference in our patients necessitates the most careful choice of means for cure; and while in some cases the denudation of the dentine by filling would be malpractice, in others it is the best treatment at present known.

Dr. Gilmour had had occasion to obtund sensitiveness in dentine as the result of very moderate separation, which, in other teeth, would have given no inconvenience, and would even admit of a freer use of the chisel without discomfort to the patient either during or after the separation; would follow no system of separating merely as mechanical effort, but deviated whenever judgment would suggest a change.

He expressed himself as a firm believer in the separating of the oral teeth by chiseling the palatine faces—preserving, however, all the labo-approximal contour of the teeth.

ALONZO BOICE, D.D.S., *Reporter.*

A MEETING was held on Wednesday evening, Oct. 5, 1870. The President, Prof. McQuillen, in the chair.

Dr. Neall read a paper on "Alkalies and Alkaline Saliva." (See page 622.)

Prof. Stellwagen occasionally met with cases where the dentine, after exposure to alkaline saliva, appeared to have lost its organized materials, and a white, friable or chalk-like residue remained. He did not think the enamel appreciably affected by such alkalies as are found in the mouth,—no doubt due to the heavy percentage (95 to 99) of inorganic matter in it. The layer of dentine, with its ramifications of tubuli, and the membrane immediately under the enamel, are largely made up from the organic kingdom; and there is but little doubt that strong alkalies, admitted to this through fissures or openings in the latter covering, would unite with and wash out much of the animal matter. In such cases the enamel, losing its natural support, would be readily broken down by mechanical action.

When the saliva is found to be readily drawn out in ropes or strings, offensive in odor and alkaline in reaction, with the gums tumid and flabby, he had prescribed an acid mouth-wash recommended by Prof. Garretson; its use gave happy results, without any sign of injury. Subsequent trials of the same stimulants, without the aromatic sulphuric acid, he thought equally satisfactory, and he now rarely made use of it.

It is asserted by some authorities that the vegetable acids produce an alkaline constitutional effect, and pure lemon-juice is a well-known remedy for rheumatism, which disease the antacids will relieve. If this be true, it is probable that the mineral acids will operate best to change the oral secretions.

Dr. Bonwill being called upon, said: In reply to the invitation of the President to explain my electrical mallet, I will confine myself to its inception and completion so far, and the probable changes which I shall make, as well as the virtues it possesses over all other so-called automatics.

I commenced it in January, 1866. Having no precedent upon which to go, I had necessarily to make many changes before arriving at its present perfection. I have been using it in my practice since March, 1870, with the most gratifying results. Even without another change, I consider myself blest in having such an auxiliary. As you will perceive, it is made up of one electro magnet, three inches long by one in width.

To one pole, or end, is adjusted a mallet of two ounces of soft iron, acting as the armature in ordinary magnets, with a hard rubber centre, that strikes upon the end of the instrument which comes out of the centre of the core of the electro-magnet at that point. The points are separate from this central piece, and can be taken out and replaced with one hand. It is driven by three cells of the bichromate of potass. battery, or ten of the Kellogg. The latter is preferable, although of double cost, requiring attention but once monthly, while the bichromate must be

watched daily. It can be used wherever the ordinary mallet, or any of the so-called automatics, can be manipulated; is perfectly under control; circuit can be broken or completed by the foot or finger instantaneously; will give the hardest blow, or at the next moment the most delicate, without any change of screw. As the point of the filler passes through not more than the two-hundredth of an inch in space, the most delicate walls can be considered secure. It strikes at least three blows before the instrument can be moved from one place to another. The stroke is always uniform in speed and power. It can be made to run slower. As electricity gives the sharpest blow of any other known agent, the tooth is not displaced; or, if it is driven up into its socket, it is kept so, and not allowed to oscillate, as is the case when the mallet, or any of the so-called automatics, are used.

No outside assistance being required, you are "master of the situation." My patients tell me that, as compared with all other modes of filling, when used in quick succession after each other, the electrical is far superior.

From the rapidity of blows you can save at least one-third time. Although my mallet is but one-third the weight of the leaden mallet, yet, from the lightning rapidity with which mine is drawn to the magnet, being greater the nearer it approaches the helix, the same power is given as when the leaden one is used in the hand. This quick and powerful blow makes it far easier for the patient. Sensitive dentine is deprived of much of its unpleasantness, and, where periostitis is present, is far less noticeable. This want of weight in the mallet is more than counterbalanced by the lightning stroke, making it a young thunderbolt, and not a mere click, as by the pneumatics. As to saving of labor, it has no rival. Ease to the patient in major operations is another very great desideratum. To perfection in filling it must, in competent hands, be far greater, since so much mental and physical force is concentrated. It is the *only* truly automatic mallet; not easily disarranged. As to any changes, I see but one. I shall endeavor to make the part held in the hand one-half less in diameter. Even without any modification, I could remain perfectly contented to go on in the arduous duties of the practice. At a more opportune time I shall be pleased to demonstrate in a clinic, and give a fuller description.

As to my plan of bleaching teeth, suffice it that my main dependence is upon thorough excavation of the dentine, where the discoloration is, and not in the enamel. I sometimes pack gold against white paper, and often osteoplastic, keeping it as *dry* as possible before the introduction of the material. I learned this sixteen years ago in sending a natural tooth for sample. By the time it reached the depot it was entirely too white.

The use of the galvanic battery in sensitive dentine has been absorb-

ing some of my time since March. I have made use of it in about forty cases, and, with the exception of a few children, I have had most gratifying results. These cases were intelligent patients; and after trying the current from first one pole, then the other, and in various ways endeavoring to cheat them,—one by detaching so that no current could pass,—I found that, whether anæsthesia was produced or not, one thing was certain,—the patient would not allow the excavation to be continued without the direct application. I noticed that after the current had been passing for a few minutes through the excavator, and then breaking the circuit, the dentine was the same as when the current was passing, but remained so only a few moments, returning to more than its former sensitiveness. As soon as the circuit was completed, after holding the excavator for a few moments to the tooth, the anæsthesia was again complete. This would seem to prove that electricity is a temporary local anæsthetic, or why should the obtunding still remain after breaking the currents?

No subsequent ill effects have been noticed. Until I have made further research, I prefer to say no more as to its application, as it is one of those subtle agents that cannot be handled by the majority of practitioners without explicit rules. The general condemnation of its use in extracting suggests that I be prudent in what I may say at this time. So soon as other cases may be experimented upon, proving its further practical results, I shall make it known to the dental world.

Prof. Stellwagen. If an automatic mallet can be made that will prevent the supposed necessity of exposing the infirmities of patients to third parties, and at the same time relieve the weak or sickly operator from the expenditure of force in filling, it would be well.

Patients are no less entitled to privacy during dental than medical treatment. It is often necessary for the practitioner to hold strictly to the Hippocratic oath, in order to gain that thorough knowledge of the general health of the patient, which is essential for the cure and prevention of disease.

Prof. Stellwagen had used the galvanic current upon teeth, and found that it caused uneasy or painful sensations, but he expressed a determination to try it again.*

---

* He states that he has since tested with both poles and different degrees of strength, during the removal of sensitive dentine from the teeth of patients. Three (physicians of experience and skill) pronounced it to be a decided addition of pain or discomfort to that of the cutting; one patient rather favored it, as he had a "great respect for electricity;" and the fifth, a hysterical young lady, seemed much pleased with the noise of the machine, which diverted her attention from the operation, leaving her unconscious of the pain. There was no difference of expression when the instrument was attached to or disconnected from the battery, so long as she was allowed to hold the handle and listen to the buzzing.

He thought that too little attention was paid to the manner of proceeding with patients. By gentleness and tenderness, combined with firmness, much of the dread of operations and accompanying misery could be dispensed with.

Some years ago, when he was a student, he witnessed an amusing case. It was at the time when galvanism was being heralded to the world as the great means for the painless extraction of teeth, that an illiterate woman demanded the use of the battery. She was provided with an old-fashioned apparatus, used for warming wax in water over a spirit-lamp, and was directed to grasp the two handles firmly, while an assistant, with a solemn mien, worked the sham battery by turning the hot water-pot around. When she thought the strange power of the machine sufficiently developed, she signified her state of preparation to the operator, who performed the operation successfully. The bystanders were much edified by her earnest assurances that, far from feeling any pain, it had proved rather a pleasant sensation; and she was not aware when the extraction was performed,—in fact she was so well pleased that she determined "*never to have another tooth out without it.*"

The poor woman left happier, but not wiser, while many of the students marveled at the *morale* which confidence in immunity from pain gave.

Seriously, he thought the success attending the use of galvanism for sensitive dentine was owing to the courage instilled by the mystery and the light, quick cuts with sharp instruments, together with the general tenderness of the operator.

Dr. Gilmour spoke of the relative liability of teeth to discolor from given causes. 1st. Superior centrals from blows. 2d. Superior laterals from infiltrated putrescence as the result of pulps dying from thermal changes. 3d. Bicuspids, same cause as laterals, with the addition of local stains from amalgam fillings;—laterals, however, being the most frequent of all. He also mentioned the air-drying method as practiced by Dr. Flagg and himself in ordinary daily operations. He thought the term *bleaching* rather obsolete, as the use of medical agents was displaced by the air-drying process under the rubber dam, which proved very satisfactory after two years' testing.

Adjourned.

H. L. Gilmour, *Reporter*.

Two others disliked it; and one (a nervous lady) thought it possibly relieved the pain, but was soon tired of holding the handle.

There did not seem to be any advantage gained by connecting the instrument with the battery, as the application of the current to the cheek or hands was quite as effective.

FIRST DISTRICT DENTAL SOCIETY OF NEW YORK.

A STATED meeting was held, Oct. 12, 1870. Subject, "Excavating and Shaping Cavities."

Dr. Bronson said: The proper excavation of decay and formation of cavities in teeth preparatory to filling, constitute, in large part, the foundation of successful dentistry. The first five minutes have more to do in deciding whether the operator and patient are in harmony than all subsequent work. A rude, harsh, or careless commencement upon a decayed tooth, whether it is sensitive or not, produces an impression which the patient does not forget, and for which after-kindness will not atone, because it is always distrusted; it reveals a possibility which may at any time be repeated. It is also that part of the operation from which the patient shrinks with almost instinctive fear, preferring sometimes the loss of teeth rather than to suffer the pain necessary to their preservation. And in so far as it holds this *first* place in the mind of the patient, so far does it give to the dentist the opportunity, by kind and skillful manipulation, of securing for himself not only the confidence, but oftentimes the warm personal attachment of those for whom he operates. No other profession presents such a field for the exercise of kindness, carefulness, neatness, patience, honesty, and these have as much to do with the question of success or failure as has the *quality of work.*

The instruments must be of the best steel, suitable form, and a temper to take and retain a keen cutting edge. The form of the first importance is the hatchet-shaped blade, bent at a right angle, one-sixth of an inch long, and slightly flattened; second, the hoe, crescent shape, right angle, flat upon the inner side, and one-eighth of an inch long.

Especial care is required in the preparation of the cavity at the line of union of the enamel and dentine, where discoloration and decay sometimes commence a few months after filling.

Free access, both for the eye and the instrument, should be secured, the more direct the better. If a cavity cannot be seen and reached through the parts decayed, cut away where it is not decayed, and restore with gold.

Dr. Clark had supposed the line of discoloration spoken of by Dr. Bronson as the result of not carrying the excavation far enough, but is glad to receive the intimation that it is seated in the membrane. He can never buy any instruments of the right temper; they should not have the temper drawn at all. He is willing to have them break if he does not use them carefully enough to prevent it. He makes them as hard as he can, and then draws the temper in the throat of the instrument while holding the blade against or partly imbedded in lead.

Dr. Kingsley said the form was quite as important as the temper. For

cutting enamel, the straw-color indicates the temper, and the edge should be the form of a carpenter's plane, or nearer a right angle; says he has suffered for hours having a cavity excavated by an eminent dentist, which he then and now believes could have been done, with proper instruments, in a few moments.

Dr. Francis is in favor of large blades, as there is not so much danger to the pulp; cuts out all fissures to good, solid substance.

Dr. Kingsley is not in favor of opening every fissure; has known them to remain for years without extending.

Dr. Clark thinks the new style fine fillings will not last forty years, like those of former times; is opposed to the display of gold.

Dr. Bogue spoke of the old custom of waiting a year after extracting before inserting a new case, regardless of the fact that in young persons the alveolus is to be *filled*, and in older persons to be *absorbed*. So we should observe the *conditions* in regard to these fissures. If the enamel is well calcified, indicated by shade and texture, it may be safely let alone.

Dr. C. E. Latimer called attention to the use of hydrate of chloral in excavating teeth; has used it for children; applies a little crystal in the cavity, covered with wax.

Dr. J. S. Latimer says it produces good results given internally: dose from 20 to 60 grains, in syrup.

Dr. Rushmore says he uses elixir of hydrate of chloral; dose, about 30 grains.

Dr. Castle considers it unsafe, administered internally, beyond about 10 grains. Its local application in the teeth is safe.

Dr. Kingsley gave an interesting account of the restoration of a sunken nose by the use of a vulcanite frame covered by the flap.

October 26.—Subject, "Tin Foil."

Dr. Clark referred to the fact that many people who cannot afford to have their teeth filled with gold will not have them filled with tin, because they are prejudiced against it; thinks dentists should try to remove that impression, and fill with tin for those who cannot afford to pay for gold; recommends beginners to occupy what would otherwise be waste time with such operations; says tin fillings will last sometimes forty years. We often find it lining the walls of large cavities, preserving the teeth perfectly, better than gold would do under the same circumstances.

Dr. J. S. Latimer uses tin more than formerly, and likes it very much.

Dr. Varney indorses all that has been said in favor of tin for filling teeth; thinks it is neglected very much by our so-called first-class operators.

Dr. Francis says the only objections to tin are that it wears away if much exposed to friction; and it oxidizes under some circumstances,

though slowly; thinks it better than gold for some cases, especially third molars; has known tin fillings to last many years.

Dr. Bronson says we should not estimate the value of our work according to the value of the material used.

Dr. Castle says that forty years ago tin was considerably used with great success; a less degree of galvanic action makes the use of tin desirable. Many teeth that cannot be saved with gold may be saved with tin.

O. A. Jarvis, *Secretary.*

NEW JERSEY STATE DENTAL SOCIETY.

Pursuant to a call signed by twenty-seven dentists of the State, the Convention met at Trenton, October 25th, 1870.

Dr. Fowler was called to the chair, and Dr. Hanks was selected as Secretary *pro tem.*

A committee was appointed, who reported a constitution and by laws, which were adopted.

Three classes of membership are provided for: active, corresponding, and honorary.

Active members must be graduates of some dental college, or have been in practice three years, including pupilage, subject to examination by the committee on membership.

An election for officers resulted as follows:

President.—J. Hayhurst, Lambertville.

Vice-President.—C. S. Stockton, Mt. Holly.

Secretary.—E. F. Hanks, Rahway.

Treasurer.—L. E. Reading, Trenton.

Professors J. Taft and J. H. McQuillen were elected as honorary members; also Dr. J. S. Latimer as corresponding member.

Dr. Stockton was selected to deliver the annual address at the next meeting.

Dr. Kingsley, by request, gave a clinic, demonstrating the use of the rubber dam, remarking at the same time that if he were compelled to give up all he had learned in the last ten years, with the privilege of reserving one thing, that thing would be the rubber dam.

The next subject was, "Different Methods of Separating Teeth."

Dr. Stockton separates the bicuspids of children after the method of Dr. Arthur, of Baltimore, and advised it in all cases of frail or very soft teeth

Dr. Hanks objected to the V-shaped separations on account of the packing of food between the teeth, causing inflammation.

Dr. Kingsley advocated a mixed practice, according to the demand of the case, relying on his judgment.

Dr. De Lange separates incisors by packing cotton between them.

Dr. Hanks advocated quick wedging, using generally two wedges,—one at the points and one at the necks.

Dr. Stockton objected to this method from personal experience, on account of the severe pain.

Dr. Cosad thought the quick method preferable when judiciously applied; but when carried to the extent of throwing all the spaces into one, he agreed with Dr. Frank Abbott, that the practice was villainous. After a few moments the pain passes away, leaving a numbness that is not unpleasant.

Dr. Dibble separates bicuspids by the use of the inverted V-shape.

Dr. Hayhurst separates with orange wood applied by the patient; objected to filing incisors, on account of the unsightliness of their appearance.

"Mechanical Dentistry" was next taken up. Dr. Dean explained the method of taking impressions in plaster used by Dr. Westcott, of Syracuse.

Dr. Chew fully indorsed the same.

Dr. Stockton, in very soft and flabby mouths, trims the cast in such manner as to allow the plate to rest firmly against the palatine surfaces.

Adjourned to meet the second Tuesday in July, 1871, at Newark.

E. F. Hanks, *Secretary.*

WISCONSIN STATE DENTAL SOCIETY.

A Meeting of the dentists of the State of Wisconsin, pursuant to a call issued by several of the most prominent operators, was held in the office of Dr. Henry Faville, Sept. 27 and 28, 1870.

Dr. Edgar Palmer, of La Crosse, was called to the chair, and Dr. Faville elected Secretary.

A committee was appointed to report a constitution and by-laws, which were subsequently adopted.

Section 2, article 4, of the constitution, reads as follows:

"Any one commencing the practice of dentistry after this date shall not be eligible to active membership without a diploma from a dental college."

The following were elected officers for the ensuing year:

President.—D. W. Perkins.

1*st Vice-President.*—E. N. Clark.

2*d Vice-President.*—Arthur Holbrook.

Recording Secretary.—C. C. Chittenden.

Corresponding Secretary.—Edgar Palmer.

Treasurer.—J. C. Lukes.

On motion of Dr. Palmer, voted that any dentists present, who have had eight years' successful practice, be now admitted to membership upon payment of $5 and by signing the constitution.

The President appointed the following standing committees for the ensuing year:

Executive Committee.—Drs. Palmer, Solliday, and Foster.

Publication.—Drs. Chittenden, Goodwin, and Sherwood.

Membership.—Drs. Barnes, Smith, and Holbrook.

Dental Ethics.—Drs. Brown, Washburn, and Stevens.

The following resolution was introduced by Dr. Palmer and adopted, viz.:

That the President appoint a committee of three to obtain, if possible, from the Legislature, at its coming session, a charter of incorporation for the benefit of this society. Further, it shall be the duty of this committee to draft a bill for presentation to the General Assembly of this State, for the regulation of the practice of dentistry, and to present the same at the next regular meeting of this society for its consideration and action.

Committee, Drs. Palmer, Chittenden, and Barnes.

During the session an interesting discussion took place on several practical subjects.

Adjourned to meet in Madison on the second Tuesday in January, 1871. CHAS. C. CHITTENDEN, *Recording Secretary.*

MERRIMACK VALLEY DENTAL ASSOCIATION.

THE annual meeting of this association was held at Portsmouth, N. H., on Thursday and Friday, November 3d and 4th, 1870. The following were elected officers for the ensuing year:

President.—Dr. A. P. Stevens, Portsmouth, N. H.

Vice-Presidents.—Drs. G. A Gerry, Lowell, Mass.; I. J. Wetherbee, Boston, Mass.

Recording Secretary.—Dr. A. M. Dudley, Peabody, Mass.

Corresponding Secretary.—Dr. L. D. Shepard, Boston, Mass.

Treasurer.—Dr. H. Hill, Manchester, N. H.

Librarian.—Dr. C. Heath, Manchester, N. H.

Executive Committee.—Drs D. W. Edgerly, Farmington, N. H.; G. A. Young, Concord, N. H; C. W. Clements, Manchester, N. H.; B. P. Merrill, Plymouth, N. H.; and W. E. Riggs, Lawrence, Mass.

Several essays were read, clinics were given, and discussions followed upon the various topics treated.

The semi-annual meeting of the association will be held in Manchester, N. H., the first Thursday in May next.

A. M. DUDLEY, *Recording Secretary.*

NORTHERN IOWA DENTAL ASSOCIATION.

This association held its annual meeting at Waterloo, commencing June 14, 1870. President, Dr. E. L. Clark. For the ensuing year the following officers were elected:

President.—Dr. J. T. Abbott, of Manchester.

Vice-President.—Dr. A. S. Hodge, of Maquoketa.

Corresponding Secretary.—Dr. M. D. Goble, of Dubuque.

Recording Secretary.—Dr. A. V. Eaton, of Anamosa.

Treasurer.—Dr. C. Poor, of Dubuque.

A number of essays were prepared for the occasion; one receiving particular attention, by Dr. J. T. Abbott, on "Hygiene and its Relations to the Dental Organs." Dr. M. D. Goble followed with remarks upon the use of the phosphates, hyperphosphates, etc., in supplying a deficiency of the system, in children especially.

Dr. Goble inserted a filling for Dr. Artman in an approximal cavity of a superior central incisor, using heavy foils and "heroic wedging," every one present insisting that the wedges needed another tap. As it was a *dentist*, and the teeth were very much crowded, the doctor commenced his filling on the outside of the cavity, and next to the upper wedge and a little above the cervical wall, building down and into the cavity. The filling presented a beautiful surface like solid gold, hard to equal with thin foil. The operation was performed with entire satisfaction to the members, with perhaps the exception of Dr. Artman, who seemed not to be quite so much in favor of "heroic wedging."

One unpleasant duty of the association was the expulsion of two of its members and the reprimanding of another for unprofessional conduct.

The President appointed the following committees:

Executive Committee.—Drs. J. S. Nicholson, C. A. Clark, and A. S. Hodge.

Committee on Membership.—Drs. M. D. Goble, C. Poor, and A. B. Mason.

Committee on Dental Ethics.—Drs. J. Nicholson, Wm. P. Dickinson, and C. P. Artman.

Adjourned to meet at Anamosa on the second Tuesday in June, 1871.

A. V. Eaton, *Recording Secretary.*

AMERICAN DENTAL ASSOCIATION.—CORRECTION.

In the report of the proceedings, on pages 526 and 527, October number, seven lines are credited to Dr. Mills which should appear under the remarks of Dr. Dickerman, the preceding speaker.

CLINICAL REPORTS.

CLINIC OF DR. J. E. GARRETSON, UNIVERSITY OF PENNSYLVANIA.

REPORTED BY DE FOREST WILLARD, M.D.

Enlarged Tonsils and Uvula.

The first case which I shall show you is that of a lad, who presents himself for a difficulty of the throat, which he describes as annoying rather than painful. He is troubled with a continuous sense of irritation in the fauces, and with a desire to expectorate a thick, tenacious mucus which collects there; and whenever the disease is aggravated by cold, he complains not only of soreness, but also of a difficulty of breathing, especially at night.

I look into his mouth to ascertain the cause of this irritation, and immediately discover two projecting bodies, one from either side of the fauces, between the anterior and posterior half arches, which I recognize as hypertrophied tonsils. These tonsils, as you will remember, are oval or almond-shaped, somewhat rugose, glandular bodies, presenting a number of follicular depressions, the sides of which are surrounded by small closed spherical sacs, analogous to those found in Peyer's patches in the intestines, and which have walls of considerable thickness, lined by epithelium; these sacs contain a tenacious, grayish-white secretion, and sometimes open upon the surface. Some of them, beneath the mucous membrane, though called glands, yet appear to belong rather to the absorbent than to the secreting glandular system, though they do indeed bear a certain generic resemblance to the ductless glands.

The tonsils are liable to become inflamed from various causes; but I will not stop to dwell upon acute tonsillitis, passing simply to say a few words upon the chronic hypertrophy or enlargement which we have in the case before us.

This disease is usually found in children, rarely, if ever, appearing after the attainment of puberty, and is almost invariably, some authors say without exception, associated with a scrofulous diathesis; yet I believe it might occur from repeated attacks of tonsillitis, the frequent recurrence of which might end in chronic inflammation, effusion, and induration.

This enlargement is at times but slight, and the inconvenience proportionately trifling; but when the organs are so greatly hypertrophied as almost to touch each other at the median line, thus blocking up the entrance to the throat, then the distress, which is chiefly mechanical, becomes severe, and at times alarming, especially when surrounding tissues are likewise implicated.

In these cases the respiration at night is loud and snoring, the voice is necessarily greatly altered, the hearing is impaired from pressure upon the orifice of the Eustachian tube, and the breath is very offensive. Enlarged tonsils vary in color from red to a bluish, venous tinge, and in density we find them of all grades, from that of a spongy mass to almost a cartilaginous hardness.

This hypertrophy being an indication of a general constitutional taint, demands systemic, rather than local remedies, or at least in connection with them; yet both will usually fail in producing absorption when once effusion and induration have occurred. Our chief reliance must be upon general hygienic measures, in careful attention to food, clothing, exercise, etc. Cold sea-bathing I especially recommend.

In regard to medicines, the various preparations of iodine have, of course, been largely used, and, at times, with apparent benefit, yet they are open to the objection that their use, in some cases, tends to a diminution rather than to an exaltation of the vital forces.

When medication is demanded, it is to be directed to the correction of any observable constitutional defect or irregularity. Tonics are almost always useful. Pressure by the finger, frequently repeated, punctures with the point of a bistoury, the application of any of the sorbefacients, very dilute gargles of the tincture of capsicum; any or all these means may have local trial, but it is to be regretted that the promise is very little. Dilute tincture of iodine, or a solution of nitrate of silver, may prove of benefit. In Europe, the local application of iodide of zinc has received many praises. It is at first used in solution of moderate strength, but afterward in its pure deliquesced state. All these remedies failing, however, as usually occurs, we are then compelled to remove a portion of the organ. For the accomplishment of this purpose various instruments, called tonsillotomes, have been invented, all constructed essentially upon the same plan, *i.e.* a ring to encircle the gland, a catch-pin to secure it, and a knife, wherewith to make the section. The best patterns are those of Fahnestock and Physick; with these instruments the operation is rapid and safe, even in inexperienced hands. In introducing the instrument, the head should be firmly held by an assistant, ether being unnecessary, except in children, where the struggles are violent; the gland should be quickly grasped in the fenestrum, a hook being used, if necessary, to drag it into this position. The catch-pin being now slid, the section of any desired portion may be easily accomplished.

The presence of the instrument often excites violent gagging and retching, and it is therefore advisable to educate the throats of our patients to its use for several days before an operation.

Hemorrhage is usually slight, yet cases are on record where it has

been severe and even dangerous; still, as a rule, there is no trouble that a simple gargle of alum-water will not be quite sufficient to overcome.

Some surgeons prefer a hook and probe-pointed bistoury for making the section, yet it is only safe in practiced hands, and even then the sudden movement of the patient might incur the wounding of the internal carotid artery, which, you remember, passes in such close proximity to the gland; an accident which would be a most unpleasant and serious complication to so simple an operation. In my judgment, therefore, it is always better to adopt the safer plan, especially when it is just as effectual.

[Dr. G. then removed both glands with the tonsillotome of Physick, and also snipped off a portion of the uvula, since it was similarly affected and elongated. The hemorrhage was trifling, and the lad was simply directed to protect the parts, for a few days, from sudden exposure.—De F. W.]

Neuralgia.

I have to present this morning an old man, aged eighty years, who has for sixty years suffered with neuralgia—a disease which is so common and painful that it should receive the careful attention of every one who undertakes the profession of caring for the comfort and health of his fellow-beings; a condition which renders thousands of lives miserable and which you will probably meet with in some of its Briarean forms as frequently as with any complaint you will be called upon to treat. This man has been under the care of many, very many physicians; has exhausted almost the entire pharmacopœia, and even in this amphitheatre, in the time of Profs. Physick and Dorsey, submitted to a section of the facial nerve, under the then-supposed idea that this nerve had something to do with neuralgia.

Let us consider a moment,—this man has had a neuralgia through all these years; obviously, then, there must be some persistent cause. Can we find it? We will try.

But, in the first place, what is a neuralgia? Its derivation, νεῦρον and ἄλγος, would merely indicate "nerve pain," but this is expressive, not of a special disease, or cause, but of a result,—it is a condition following a cause; hence, if we can discover the causes and remove them, we shall cure our patients, shall we not? That is, provided the causes have not operated for such a length of time as to have produced alteration in nerve structure. That there is a local cause in almost every instance of neuralgia, I fully believe,—that we do not discover it does not prove it absent, but merely our inability or ignorance.

To discover this cause or causes should, then, be a first object, as, should we pour in nervines without such knowledge, we should be but firing a charge of shot at an enemy in the dark, trusting to chance that

some one of them might reach him ;—and let me say that these causes are often evident and of easy removal; at other times, however, they are exceedingly obscure, and will only be discovered by a careful diagnostician. Failing to discover it, we are then forced to desert principles and experimentally treat, with a hope of accidental success. I may here, perhaps, with profit, present some thoughts which are better digested than would be those uttered in a hurried clinic.

Neuralgia, as the word has been made to have definite application, refers to paroxysmal pain, localized or metastatic, presenting no manifestation of any lesion at the seat of pain outside of the single phenomenon; its pains are usually, though not exclusively, acute in character; are confined to the tract, or to the periphery, of a certain nerve; remit, or more commonly intermit, and are alone accompanied with tenderness of the part involved when an accidental associate lesion may exist, or when an irritation is so severe, or has been so long continued, as to have reacted on the neighboring vascular system.

Holding, then, these views, I should say, from my own experience, that there is no special disease, with an individuality of its own, which can be termed neuralgia; and my reasons for the denial would lie in the fact that I have in one way or another become conversant with so many cases which have stubbornly resisted a long course of treatment, founded on an abstract neuralgic theory, but which have rapidly and readily yielded on the discovery and removal of some true lesion of which the pain was simply a sympathetic connection; as, for instance, otalgia, hemicrania, or even sciatica from an exposed tooth pulp, from a splinter of foreign substance, or from the pressure of an exostosis. It is certainly true that there is a class of persons who might be termed neuralgic, but these do not belong strictly to what is called the nervous temperament, but are the anæmic and prostrated. A plethoric temperament disposes to inflammation, but plethora is not inflammation,—it is only a predisposition; so in like manner the nervous temperament is only a predisposition. One could not deny that cases called neuralgia, and treated without ideas of a definite lesion, do very frequently get well; but has not the indication been accidentally met, just as with Dewee's carminative we treat the restless child and cure it without definite idea of the ailment, having in a single medicine the requirement of various conditions? I think this is so.

That there are predisposing causes to neuralgia is, however, evident; such as damp, cold atmospheres, fatigue, excitement, impairment of health, poor food, excesses, etc.,—in short, anything which interferes with easy and proper performance of functional life. This disease is frequently periodic in miasmatic regions, and is often cured by the exhibition of quinine: indeed, this is one of the most efficient of our remedies

for the relief of this disorder; but whether this is because the medicine controls the full and complete cause of the trouble, or only removes an exciting cause, which, in its absence, gives to nature the mastery, I scarcely know; but it is certain that the pain is not always removed by the destruction of the periodicity. Syphilis may in like manner be an exciting cause, the real cause being some distinct lesion. Gout and rheumatism should not be mistaken for this complaint, for each has a history which is its own—the former being decidedly inflammatory in its local manifestations; is accompanied by congestion, œdema, etc.; attacks in preference the small joints, and, when metastatic, presents the same irregularity of vascular phenomena at the seat of transfer; while the latter affects the large joints, or, if muscular, is not distinctly localized, and is aggravated by changes of temperature, motion, etc.

To epitomize the subject, then, we might say that in a state of health the nervous system represents the poised balance. It is neither excited nor depressed; it works in entire harmony with its requirements. Apply now a source of irritation, and this harmony or balance is destroyed; and according to the amount and extent of irritation, so is the amount and extent of derangement. Life, says Bichat, rests upon the tripod of innervation, respiration, and circulation; whatever affects one of these legs affects the whole body. To appreciate the phenomena of neuralgia, then, is to appreciate the phenomena of irritation,—is to search over the economy until whatever lesion exists is exposed and comprehended.

If a first view is directed to the nervous system itself, we look for a lesion in the part which by the expression of pain seems most markedly implicated. Let us, then, apply our knowledge to this old man before us, and see if we cannot discover some cause for all this long-continued pain. By inquiry we find that these pains are sharp and lancinating in their character, and that they are localized, or rather seem to radiate from points just above and below the orbits. How shall we explain this? We know that the face is supplied with sensation not from the seventh or facial or portio-dura nerve, but from the fifth or trificial or trigeminus, and that this nerve also supplies motion to the muscles of mastication and taste to the anterior two-thirds of the tongue. Thus we see that it is a compound nerve; and it is an important one for our study, since it is one in which we shall most often meet severe neuralgia. Let us glance, then, at its anatomy. It arises by two roots from the lateral tract of the medulla oblongata, just behind the corpus olivare, and appears to superficial view upon the side of the pons varolii; thence, running forward to the apex of the petrous portion of the temporal bone, a ganglion is formed,—the ganglion of Gasser, or Casser, otherwise called the semilunar ganglion,—from which are given

off three branches. The first, the ophthalmic, passes out of the cranium at the sphenoidal fissure, or foramen lacerum anterius, and, running forward, supplies all the parts contained in the orbit,—to emerge upon the face at the supraorbital foramen, supplying the brow and forehead. The second, or superior maxillary, passes out of the cranium through the foramen rotundum, runs forward through the spheno-maxillary fissure, and, entering the infraorbital canal, finally appears upon the face at a foramen of the same name, and is distributed upon the cheek and upper lip; in its course also giving off branches to the teeth of the upper jaw, as well as to surrounding parts, with which we are not now concerned. The third, or inferior maxillary,—compound in its nature,—leaving the cranium at the foramen ovale, passes downward to enter the posterior dental foramen, from whence it runs through the dental canal to appear upon the face at the anterior mental foramen; supplying successively in its course the nerves of motion to the muscles of mastication, of taste to the anterior two-thirds of the tongue, and of sensation to the lower teeth.

Recalling thus the anatomy of this nerve, it is easy for us to recognize that these points of pain, to which this man directs us, are immediately over these points of emergence upon the face, and that these pains follow the exact course of their branches, especially those of the ophthalmic and superior maxillary.

Now, let us apply our reasoning. We have said that there must be a cause for these pains. Let us look for it. Any one of you would at once say,—this fifth nerve supplies the teeth; and we know that the teeth are often carious, causing not only pain in the nerve supplying them, but also in other branches of that nerve by a reflection of that irritation!

Such would be true, and it is a fact that eight out of any ten cases of facial neuralgia can be traced directly to some disease of the teeth or jaws; the most decided cases at least are odontalgic, and for this reason: a tooth decays until the cavity containing the delicate nerve is exposed; hence the neuralgia has the simple, single signification of a direct irritation, or an exostosis of a tooth-root presses upon nerves ramifying in the alveolo-dental periosteum. The signification is a similar one.

These cases of reflected neuralgia are very common, and not only in the branches of the fifth nerve, but also in the nerves of the arm or even of the leg, simply from a carious tooth.

These cases, then, may be called *neuro-odontalgia,* and as most common causes of this we may enumerate:

1. Sensitive dentine.
2. Exposure, direct or indirect, of dental pulp.

3. Diseased state of periodonteum.
4. Confinement of pus or gas in pulp cavity.
5. Granules of osteo-dentine in pulp.
6. Sympathy.
7. Recession or absorption of gums and alveoli.
8. Eruption of wisdom teeth.
9. Abrasion or wearing down of teeth.

(1) Sensitive dentine is usually found in teeth in which a slight cavity exists. The best method of cure in these cases is to send the patient to his dentist and have the cavity properly filled; but if this be not practicable, you could yourselves polish down the tubules, thereby preventing further absorption of irritating material, for you know that the teeth are made up of tubules which are arranged side by side like rods, and have the power of capillary absorption. This power, as I have said, may be destroyed by polishing or by the cautery of nitrate of silver; but the best plan is to either fill the cavity or pull out the tooth. This, however, is not the cause in the old man, for he has no such sensitive tooth.

(2) I show you here a model of the section of a tooth, and within it you will see a cavity, called the pulp cavity, in which ramify arteries, veins, and branches of the fifth pair of nerves. Now when a tooth becomes deeply carious, these nerves are exposed, and, of course, painful; but we may also have irritability of the dental pulp without exposure; or, again, a cavity may have been recently filled, and the presence of cold or hot substances may set up irritation by the conduction of the metal. Moreover, an experienced dentist may fill the bottom of his cavities with tin, in order to save his gold, and the consequent galvanic current may be sufficient to cause this difficulty.

(3) The periodonteum is the periosteum of the tooth. Now, you will remember that the teeth are placed in the alveoli of the jaw-bones, and this membrane, covering the tooth, is reflected from it to the walls of the cavity, forming what is called the alveolo-dental membrane, supplying the dental process with nutrition. This may become inflamed, and even go on to the formation of an alveolar abscess, as I explained to you at a former clinic (vide *Reporter*, vol. xii., No. 10), in which case you would find the tooth sore, and closure of the jaws would give excruciating pain, since the lifting of a tooth but the thousandth part of an inch by the swelling of this membrane would cause it to be first struck by the opposing jaw; and I would here repeat that this pain upon occlusion of the jaws is an excellent diagnostic test in distinguishing inflammation of the alveolo-dental membrane from pulp inflammation This man has no sore teeth, but I find one old root remaining in the jaw, which is very carious, while about it are all the evidences of inflammation; there is evidently a periodontitis.

(4) Should the tooth pulp die from any cause, in an unexposed pulp cavity, and decompose, it must leave the products of such decomposition confined in the interior of this dense, unyielding tooth structure, from which it cannot escape. This pus or mephitic gas, then pressing upon such portion of the nerve as may not have been destroyed, will be reflected upon all branches of the fifth pair of nerves, and the pain will be of the most intense character. Well do I remember a patient, who had been almost a raving maniac for days, strapped to his bed, so unendurable was his suffering, all of which was relieved instantaneously, by simply drilling into a pulp cavity and allowing the escape of the contents. But this old man has none of these symptoms.

(5) Is he suffering from granules of osteo-dentine in the pulp? I think not, though the diagnosis of the existence of such bodies is difficult except by exclusion; and it is, moreover, a rare disease. What are these granules of osteo-dentine? They are the result of an extraordinary action of the pulp, which is the source of all dentine; they are sometimes fixed in position, and at others loose in the cavity. I recall the case of a young student who came to my office, having suffered untold agonies for two weeks, with a neuralgia, which extended from his eye to his ear. He had a splendid set of teeth, all perfect, and I examined thoroughly each and every one, but could detect nothing amiss,—not one gave any evidence of pain. At last, by taps of a steel instrument, I found one which gave a different sensation from the others, not a pain, but merely a slight difference, scarcely perceptible; yet I decided that here lay the difficulty. I drilled a hole into its pulp, discovered the granules, extracted the tooth, and the man was immediately relieved.

(6) Sympathy.—This occurs here as well as in all parts of the body, being so often noticed upon the opposite side in many diseases and in different organs.

(7) This occurs in old persons, or in any instance where the teeth have been removed. The slow, gradual absorption goes on, until at last you may have the entire alveolar process carried away, and nothing but a rim of bone along the base remaining, as you see in this aged skull which I show you, in which cases pressure upon the nerves is often severe, resulting in what is called edentulous neuralgia.

(8) The eruption of the wisdom teeth often gives rise to serious trouble when the arches are small and already full, and disturbances amounting even to trismus or abscess may occur

(9) This is something which will be very likely to occur in a man of the age of our patient here, and in looking into his mouth I discover three teeth which are thus badly worn. The irritation occasioned by this abrasion thus finally inflames the dental pulp, or is just sufficient to stimulate the formation of secondary dentine in the upper portion of the pulp cavity; which is thus encroached upon, and gives evidence of it by these warn-

ing pains. Yet any and all of these conditions may exist in the severest forms without producing any such result. Thus, then, we have discovered two conditions—the third and ninth of our enumeration—capable of producing such a neuralgia as we have before us—both good causes; and our duty is, of course, to rid him of these causes. We shall, therefore, remove these teeth, and see what will be the result. We may not cure him; still, we shall have been wise in removing them, for they are evidently sources of irritation, and it is quite possible that one or both of them have existed even through all these years; since the first is quite common, and may have existed in other teeth also, and the latter may have commenced at that early age owing to a peculiarity in the articulation of the teeth. Suppose the operation of this morning does not cure him; then we will try if we can ascertain the existence of any other lesion, and if we can discover any, shall immediately endeavor to rid him of this also, and thus taking away all causes, at last give him relief, or prove our incapability.

[The fang and abraded teeth were then extracted, and the patient directed to return at stated intervals, that the result may be carefully watched.—De F. W.]

Before we separate, gentlemen, let me say a few words to you in regard to "reflex" nervous disturbance, to which I alluded in the earlier part of my lecture, and, in doing this, I cannot do better than to use the words of Mr. Salter, in speaking of the affections of the nervous system dependent on diseases of the permanent teeth. "Disorders of this kind," says Mr. S., "are divided into those which are reflex, secondary, and remote, and those which are direct, immediate, and from contiguity. In the former category would rank epilepsy, neuralgia, and paralysis; in the latter, local pain, facial paralysis, some forms of amaurosis, etc. In other instances, such as those in which exalted sensibility of the tegumentary nerves of the face, or erratic pains through the maxillary nerves are associated with toothache, it might be difficult to say whether the phenomena are mostly reflex or direct: they probably comprise both conditions. . . . . The posterior lower molars are but little removed from the tonsils and Eustachian tube, from the parotid region, and from the external auditory passage. The fangs of the upper back teeth are close to the orbit and its all-important contents; and more posteriorly, they approach the spheno-maxillary fossa and fissure. Thus it is easy to account for the nervous complications which are entailed by the spread of inflammation from the periosteum of diseased teeth.

"By far the most common reflex nervous disturbances to which dental irritation gives rise are neuralgic pains of the head; and this is especially the case where the upper teeth are implicated. In the supra- and infraorbital nerves, in the globe of the eye, the temples, and par-

ticularly a spot near the vertex, a little on one side (the side of the affected tooth)—in all those regions 'dental neuralgia' is really very common; and I have observed, not unfrequently, that where the pain has long continued, the integument has become hot, tender, and red . . .

"The several branches of the trigeminus appear to be the most susceptible of reflex affections, caused by the dental irritation of one of them; but next to the different elements of the fifth nerve, the branches of the cervical and brachial plexuses are most commonly involved. Thus pains in the neck, shoulder, acromion, insertion of the deltoid, or bend of the elbow, are by no means uncommon, and with them occasionally a loss of motor power, a weary sense of fatigue in the flexor muscles, and an inability to grasp firmly with the hand. It would really seem that there is occasionally and in some individuals a special and exceptional communication between the fifth nerve and those of the arm. Dr. Anstie has seen two instances in which wounds of branches of the ulnar nerve have caused reflex neuralgia of the fifth. And he remarks upon this circumstance 'that the mental perception of the patient should in each of these cases refer the pain, not to any point in the course of the injured nerve, but to the branches of the trigeminal; and it affords, in my opinion, a strong suggestion that that portion of the central nervous system with which this trifacial is directly connected presents some congenital or acquired peculiarity of organization.' This idea is fully borne out by what one occasionally, though rarely, sees in the occurrence of brachial neuralgia and paralysis, caused by dental irritation of branches of the fifth nerve.

"Reflex nervous irritation, dependent upon dental disease, is most uncertain and capricious in its manifestation. One person will suffer much from a comparatively slight cause, while in others the same condition more severely developed will produce no such result. There is unquestionably in some persons a neuralgic diathesis; and it is not improbable also that in some individuals there may be a congenital or induced peculiarity in the centre or perhaps collateral relations of certain nerves, by which the exalted polarity of the one may be passed on, and so reflected upon another with abnormal facility. In persons subject to those forms of neuralgia from dental irritation, nothing is so liable to produce an attack as exhaustion or depressed nutrition; and patients will often inform you that the attacks only come on when they are very tired, or have been long without food. . . .

"Pain is only one of the phenomena of reflex dental nerve irritation. It may produce muscular spasm, muscular paralysis, paralysis of some of the nerves of special sense, or perverted nutrition."

These are some of the phenomena, and I shall from time to time present cases to you as they appear at our clinic.

PUBLISHER'S NOTICE.

CLOSE OF THE VOLUME.

This number of the Dental Cosmos completes the XIIth volume, and fills our engagement to those who have subscribed for it. We send bills to those whose subscriptions have expired, with the request that such as contemplate renewing them will do so promptly, in order that we may determine the number of copies to print, and that those who desire may be certain of securing complete files of the journal.

The first number of the XIIIth volume will be published January 1, 1871, and succeeding numbers on the first of each month following. Diligent efforts will be made to increase its usefulness, and to make it a practical exponent of the science and art of dentistry. We most earnestly solicit a continuance of the favors of the friends of dental progress, by subscription and by contributions to its pages, and also ask their aid to extend its circulation in the interest of the profession and of science,—that, by the combined efforts of publisher, editors, patrons, and contributors, we may enhance its usefulness and make it indispensable to every practitioner. We also urge upon every one who has not heretofore been a subscriber to try it for a single year, and see if it does not many times repay its cost. In a word, pledging ourselves to renewed exertions, we invite the co-operation and support of all who desire the elevation of the profession. We shall, as hitherto, adhere to the system of cash payments in advance, experience having shown that in no other way can heavy loss to the publisher be avoided; and, moreover, it is appreciated and prized most when promptly paid for.

Samuel S. White.

BIBLIOGRAPHICAL.

HANDBOOK OF MEDICAL MICROSCOPY. By JOS. G. RICHARDSON, M.D., Microscopist of the Pennsylvania Hospital, etc. Philadelphia: J. B. Lippincott & Co., 1871.

In the construction of this work the author has prepared it with reference to the purely practical in microscopy, and with a view of meeting the demands of those who from any cause have been prevented from acquiring and retaining a due familiarity with the microscope and its requisite manipulations. In this aim he has been successful, in presenting in a book of some 328 pages an immense number of valuable facts and suggestions, drawn from his own and the experience of others. There is such a tendency at the present day on the part of writers to prepare voluminous works, that it is quite refreshing to come across one in which the descriptions are presented in the fewest words possible. The work opens with a description of the microscope, accessory apparatus, and manipulations. Then follow the examinations of urine, pus, saliva, and milk, the blood, sputum in phthisis, vomited matters; integuments and muscles for vegetable and animal parasites, medico-legal investigations in regard to stains of blood, and poison, closing with hints concerning morbid growths.

Heretofore we have been mainly dependent upon European observers and authors in this department of science, and therefore welcome with the more pleasure this excellent treatise, emanating, as it does, not only from a fellow-countryman, but also a laborious and conscientious investigator, whose work we heartily recommend to those who are engaged, or propose to engage, in microscopic investigations. J. H. McQ.

CORRESPONDENCE.

LOCAL ANÆSTHESIA IN TREATMENT OF SENSITIVE DENTINE.

TO THE EDITOR OF THE DENTAL COSMOS:

DEAR SIR,—Your article on the "Treatment of Sensitive Dentine," in the August issue of the DENTAL COSMOS, leads me to offer a suggestion for the temporary obtunding of sensibility, which, it seems to me, might be worth a trial in painful excavation,—viz.: the method of local anæsthesia by ether or rhigolene spray, originated by MM. Henoque and Fredel, the spray being applied just in front of the meatus auditorius, over the ganglion of Casser.

In September, 1868, Dr. Perine, of this city, afforded me an opportunity of trying this method upon a patient of his, who had, I think, sixteen teeth and fangs, upper and lower, extracted without pain under its influence. (Vide *Medical Gazette*, September 19, 1868, p. 397.) The use of the spray for three or four minutes sufficed to deaden sensation long enough for the extraction of all the teeth on the anæsthetized side, and probably long enough for the completion of the painful portion of excavating a sensitive tooth. In patients with much adipose tissue over the ganglion, the effect is less rapid and less profound; but even where sensation is not destroyed it is very much lessened.

I write this to give a hint which I should be glad to learn has led to satisfactory results among your sensitive patients.

NEW YORK. ALFRED L. CARROLL, M.D.

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

"*Correlation of the Physical and Vital Forces.* By Archibald Bleloch, A.M., Glasg., D.Sc., M.B. and C.M. Ed.—In physical science, electricity, magnetism, galvanism, mechanical force, heat, light, motion, are various terms expressing the same thing under different conditions, and in varying relations. The terms are convertible because the things signified are all of one nature. Motion is the *ultima reductio;* each is convertible into the other without any residuum. In natural science we have terms of corresponding import, and the things signified are also of one nature. The terms *vis nervosa*, muscular contraction, animal caloric, growth, and nutrition, are expressive of the same thing under different conditions and in varying relations. Each is convertible into the other without any residuum. Motion is the *ultima reductio.*

"In physical science we have inorganic substrata necessary to the phenomena of physical force. In natural science we have organic substrata necessary to the phenomena of vital force. The difference resides in the substrata, and not in the forces. The words vital and physical are wholly concerned with the substrata, and hence, when the substrata are changed, vital force passes into physical force, and *vice versa.* The different phases of vital force are allotropic of the different phases of physical force, and the same correlation is observable in both the one and the other. When we speak of *vis nervosa* being eliminated and transmitted, we understand by these terms the origination and propagation of motion in the tissues which make up the nerve centres and nerve tubes. This particular kind of motion is originated in the cells and granules of the nerve centres, and is propagated from particle to particle of the fluid in the nerve tubes until it reaches the muscle, when it is immediately converted into contractile force. The *vis nervosa*, allotropic of electricity or galvanism, passes from the axis cylinder of the nerve tube to the fibrinogen and fibrino-plastic of the muscular structure, and contraction is the result. What takes place here, in natural science is exactly analogous to what happens when the physicist converts electricity or galvanism into mechanical force. The difference in the substrata modifies the quality of the force, but the correlation remains the same. Heat, light, electricity assume the character of vital forces when they operate in an organized structure fitted to the particular kind of motion which they severally represent; and as heat becomes electricity by passing through a certain combination of metals, so *vis nervosa* becomes animal caloric in certain conditions of organized tissue. A change in the substrata coincides with a conversion of the force into some one or other of its allotropic forms whether that force operates, for the time being, in organized living tissue, or in inorganic matter as such. It is well known that a current of electricity passes into muscular contractile force, without the mediation of *vis nervosa*, when conducted to living muscular structure, and it has also been abundantly proved that electricity is equally productive of muscular contractile force through this mediation. The explanation is simple: electricity, *vis nervosa*, and muscular contractile force are different forms

of one and the same thing. The substrata change, and, therefore, the phenomena. The experiment instituted to prove that electricity is not *vis nervosa*, by dividing the nerve tube and substituting a piece of metallic wire, is not scientific. It confounds the organic with the inorganic world. It forgets that while an organism lives, all the physical forces are modified to its acquirements. It is not meant by this that a living organized being is exempt from the operation of the physical forces as such. The physical forces embrace all matter, organic and inorganic, in their operations. What is meant is, that the functions of the living being are carried on by allotropic forms of the physical forces, and that these forms are determined by the substrata. Life is the sum of the allotropic forms which the physical forces assume in the substrata of the living organism. Death takes place when these substrata are no longer able to modify the physical forces so as to carry on the functions of life. To prove this we have only to place a seed in circumstances where the physical forces, and the elements essential to growth and nutrition, are present. The seed forms the substrata altogether apart from the forces which effect the growth of the tree. A seed does not live until the substrata of which it is composed are subjected to the influence of the physical forces, heat, light, electricity, etc. These enter the substrata and regulate, under allotropic forms, the growth and nutrition of the plant. In fact, they constitute its life, continuing to operate so long as nutrient materials are supplied, and the substrata do not become effete—when this takes place, the plant dies. If it be asked, Whence came the substrata?—we reply that the physical forces through their allotropic forms perpetuate the substrata of the different species of plants and animals, but they cannot originate organic substrata, because this would imply that they can assume the characteristics of vital forces in purely inorganic substrata, which is impossible. There is, therefore, no need of experiment to determine the question of spontaneous generation. It is an absurdity. It is contrary to the laws of physical science. This, however, does not alter the fact of the correlations of the physical and vital forces. A sound is propagated through unorganized matter by the rapid oscillation of the inorganic molecules, and in the same manner it strikes the tympanum, and thence through the ossicles of the internal ear, until it reaches the wonderful apparatus in which the auditory nerve terminates, when it is immediately converted into *vis nervosa*, and the phenomenon of sound is conveyed to the intelligence. The latter half of the process is effected in the same manner as the former. The one is effected through the oscillation of inorganic particles, the other is effected through the oscillation of organic nerve cells, granules, and the particles of nervous fluid. It is now held that the phenomenon of light is the result of a certain form of motion in what is termed a luminiferous ether pervading space, and which exists between the molecules of transparent bodies. Undulations are propagated through this medium, and, so long as the particles moved are inorganic, they maintain the characteristics of a purely physical force, and as such they pass through the lenses of the eye, but when they reach the retina, their allotropic form light is propagated by that apparatus through the optic nerve to the intelligence. In the case of the sense of touch, we have an instance of simple mechanical force converted into *vis nervosa*. The terminations of the sensory nerves in the dermal surface are said to receive an impression; but the truth is, that the mechanical impact or

force applied to the tactile bodies in which the sensory nerves terminate, passes into a successive oscillation of the particles of fluid in the sensory nerve tubes. The sensation of touch is the consciousness of the oscillation of these particles, carried up to the sensorium. So also with the other senses, taste and smell. They are closely allied to the sense of touch. They have special nerves, but communicate with the intelligence in a similar manner.

"When *vis nervosa* passes along the nutrient nerve tubes, it assumes the character of an allotropic form of magnetism. It is animal magnetism. It operates in the organized structure and attracts the nutrient materials appropriate to the growth and nutrition of the different parts. Again, when the *vis nervosa* passes along the nerve tubes that supply the various secreting cells, as for instance, those of the kidneys, those of the liver, or those of the intestinal glands, it assumes the form of a vital chemical affinity. It passes into the various elaborations, and in these remains stored up for further service, or for elimination. When the *vis nervosa* in the nerves is deranged through some disease of the nerve centre, the *physio-chemical* result becomes vitiated. We have then diabetes, oxaluria, excess of uric acid, and such like. All this becomes intelligible on the supposition that the physical and vital forces are correlated, and that the one passes into the other when the substrata necessary to their different phenomena are presented."

Matter, Form, Function.—"Mulder, a German physiologist, declared, half a century since, that material, form, and function were the unities of organic life, and were always inseparably associated. Accepting this as true, and science demonstrates it physically now, there was still a mystery in regard to function. But modern science clears this up by showing that force is stored up in the organs and tissues themselves; that function is performed at the expense of substance; that for each mechanical result, as the heaving of the chest, contraction of the heart, or other muscle; or for each act of vision, hearing, touch, taste, or smell; or for each emotion, as loving, hating, etc.; or for the maintaining of the temperature at, above, or below the normal standard; or for each chemical metamorphosis of food through any of its stages to solid tissue; or each act of intellection, there is, for each and all, changes of matter; that is, for each act of a living body, portions of complex matter have been reduced to simpler chemical states; and, finally, that for the evolution of any life phenomena, physiological or pathological, matter must be worked up with a definite form; and chemical changes must take place in the molecular structure of the form, as an indispensable condition for the performance of a function; and as form is changed or lost, so is function, and in any given case, to the extent of the change or loss, forever suspended. Function is, then, form or structure speaking, and is therefore the basis of all pathology. Is function annihilated, as in the case of vision? Then the molecular form of the eye has been lost. Is it changed? Then behind the change, alterations of molecular motion or form will be found."—(Z. C. McElroy, M.D., *Buffalo Med. and Surg. Jour.*)

Development and Growth of Animals.—A writer in the *American Agriculturist* says: "It is a generally accepted maxim in all stock feeding, that with growing animals, *excessive nourishment is the most*

profitable. It takes a certain quantity of food to keep the machine running; so much to supply the waste through the lungs; so much for the waste of the muscles; so much to replace the discarded material of the bones; so much to keep the digestive organs distended. The consumption—the practical destruction—of this amount of food occurs in all cases; as well when the animal remains stationary as to growth, as when it was increasing in weight from day to day. It is from the assimilated food in excess of this waste that all profit comes. The rule is as good for colts as for beef cattle. If they are insufficiently fed, all that is taken up by the digestive organs goes to sustain the vital functions of the animal,—it is used up for 'running expenses.' Every ounce beyond this tells on its growth, and the more ounces it can be made to take up in a day beyond that which the natural wastes of the body demand, the more rapid will be its growth and development; for if the food be of the right kind, and if the animal be living under suitable conditions as to exercise, sunlight, and fresh air, development will keep pace with growth."

"*Soil and Disease.*—At the present meeting of the British Association in Liverpool, Dr. Moffat, of Hawarden, has read an interesting paper on 'Geological Systems and Endemic Diseases,' showing that the soil has an influence on the composition of the cereal plants grown upon it, and on the diseases to which the inhabitants are subject. The district in which he practices consists geologically of the carboniferous and new red sandstone or Cheshire sandstone systems. Anæmia with goître is prevalent amongst those living on the carboniferous systems, whilst it is almost unknown amongst those living on the new red sandstone system; and consumption is also more prevalent amongst the inhabitants of the former. Dr. Moffat has found by analysis that the wheat grown on the soil of the Cheshire sandstone contains the largest quantity of ash, and that there is a larger quantity of phosphoric acid and of oxide of iron in it than in the soils of the carboniferous and millstone-grit systems. He has calculated that each inhabitant on the Cheshire sandstone, if he consumes a pound of wheat daily, takes in nearly five grains per day of the sesquioxide of iron more than the inhabitant of the carboniferous system, who seems therefore to be subject to anæmia in consequence of the deficiency of iron and phosphoric acid in his food. It is not only in the wheat grown upon the carboniferous system that there is a deficiency in the quantity of oxide of iron and the phosphates, according to Dr. Moffat, but also in the blood of the animals reared upon it. He stated that sheep were liable to anæmia, which he attributed to sheep-walks being upon trap and limestone hills, in the soil of which there is but little if any iron."—(*Brit. Med. Jour.* and *Med. Gazette.*)

"*Physiological Action of Carbonic Acid.*—Dr. Leven publishes (*Archives de Physiologie*) the following results of an investigation into the physiological action of carbonic acid: 1. Whether respired in the pure state or mixed with a certain proportion of air, it does not excite any convulsive action. 2. After absorption, it acts directly on the muscular fibres of the heart, modifying their chemico-physical and physiological properties, and destroying their contractibility. 3. It has no action on the blood-globules, nor on the blood-vessels. 4. It 'stupefies' the brain and the medulla oblongata: the stupefaction of the brain

manifesting itself by suspension of its functions—of intelligence, sensibility, and voluntary movement; that of the medulla oblongata, by arrest, succeeding impairment, of the respiration and circulation. 5. The reflex function of the spinal cord and the functions of the nerves are unaffected by this gas, and the contractibility of the muscles is likewise uninjured. 6. By the suspension of the functions of the brain and of the medulla oblongata, a condition of deathlike sleep is produced, which can be removed only if it has existed for a certain limited period, varying with the species and age of the animal; and oxygen is the only substance that is capable of awakening the brain and the medulla oblongata from this deathlike sleep. 7. If, by a proper mixture of carbonic acid and air, death is gradually produced (for example in about half an hour), the temperature of the body diminishes nearly two degrees centigrade, and diabetes supervenes. Sugar is found in large quantity in the blood and viscera; and in the rabbit the urine yields nearly 10 grammes of sugar to the litre 8. Oxygen and carbonic acid produce contrary effects. The former excites the cardiac contractions, reddens the blood globules, gives life to the brain cells, stimulates the medulla oblongata, and acts peculiarly as a nourishing and vivifying gas; the latter, on the other hand, is a true poison, it is a gas that kills by destroying the physiological properties of heart, brain, and medulla oblongata, and it is necessary that it should be continually eliminated. Dr. Leven's experiments were made on rabbits, cats, and guinea-pigs; to whom the gas was administered either pure or mixed with definite proportions of atmospheric air, and either by inhalation during ordinary respiration or by introduction into the trachea through an artificial opening."—(*Journ. Anat. and Phys.* and *Amer. Jour. Med. Sciences.*)

—

"*Rapidity of Mental Transmission in a Nerve.*—Professor Heimholtz has made some new measurements on the rapidity at which excitation is propagated along the motor nerves of man from the brain to the muscles. The ascertained rapidity of the excitation varies between 260 and 292 feet per second, and the rapidity is also found to be greater in summer than in winter. This result led us to a more exact observation of the influence of temperature, which is ascertained by the artificial cooling or warming of the arm. By this means the accelerating influence of a higher temperature has been clearly determined, so that the interval of time between an impulse of the voluntary power and the corresponding movement of the muscles is greater in summer than in winter."—(*Med. and Surg. Reporter.*)

—

"*Regeneration of Nerve Tissue.*—Voit has recently proved the reproduction of the cerebral tissue in the pigeon, and the coincidence of this reproduction with almost complete renewal of the cephalic functions."—(*British Med. Jour.* and *Baltimore Med. Jour.*)

—

"*Locality of the Sense of Taste.*—Dr. Camerer gives, in the last number of the *Zeitschrift für Biologie*, the results of his experiments on the locality of the sense of taste. He finds that the sensitiveness of different parts of the tongue depends essentially on the presence and number of the fungiform papillæ. These are most abundant near the apex of the tongue; they are less numerous at the edges of the organ, and disappear near the circumvallate papillæ. There are no papillæ on

the under surface of the tongue. The mode in which Dr. Camerer conducted his experiments was to press a tube of about a third of an inch in diameter over different parts of the tongue and adjoining mucous membrane, and then to pour in a solution of the sapid substance to about the height of a quarter of an inch. Nine persons were experimented on, and the subject of the experiment did not in any instance know beforehand the nature of the solution, the taste of which he was called upon to determine. The substances employed were common salt, sulphate of quinine, sugar, and sulphuric acid. From his experiments it appears that the parts of the tongue that are free from papillæ possess no sensibility; also, he finds that a weak solution of a salt is more readily perceived after pure water has been tasted than after a strong solution has been tasted during the previous twenty-four hours. By touching the fungiform papillæ with a fine spiculum of salt crystal, he was able to show that the gustatory sensibility resided in the fungiform papillæ themselves, and not in the adjoining mucous membrane."—(*Lancet.*)

Galvanometer to detect Metals in Wounds.—The *Lancet* states that "the well-known instrument maker, Mr. Krohne, has applied a galvanometer, not larger than a watch, to determine whether any buried substance is or is not metallic. Conducting cords connect the galvanometer with common bullet-forceps, and the needle is deflected as soon as any metallic substance is grasped between the blades. For wounds which are too narrow to admit of the introduction of forceps, he has contrived a sound of caoutchouc, containing two insulated wires, which project a short distance beyond its extremity. The external ends of these wires are connected with the galvanometer; and the needle is deflected as soon as both the points touch metal. At Dr Richardson's lecture, last week, he exhibited Mr. Krohne's instrument, and tested its powers upon rings and coins held in the hands of some of the audience."

Electrolysis.—In treating of the remedial applications of electricity, Prof. Jacobi observes (*Med. Record*): "Its chemical action is well known. When the constant current is passed through water, it will decompose it. Similarly, solutions of alkaline salts are decomposed; iodide of potassium, for example, will show the potassium collected at the negative pole. Now if, by means of gilded needles, etc., the galvanic current is passed through any tissue, both the salts and the water of the tissue will be decomposed; and when its salts and its water are broken up, the tissue itself is broken up. Many cases have shown that new-formed morbid growths may be broken up in this way; but not only these, healthy tissue will yield as well. Althaus has proved that bone, teeth, and other tissues are decomposed with a facility proportionate to the amount of water they contain. I have found, in a number of instances, that the electric current would produce absorption where iodide of potassium, etc. had no effect. Thus in a case of indurated mastitis of the newly born. At the same time I must say that in a number of cases it has proved unsuccessful, in all probability from an as yet insufficient knowledge of its powers, or from their improper application."

Syphilitic Disease affecting the Nervous System.—The editor of the *Dublin Quarterly Journal of Medical Science* states (*Ibid.*) that

"Thomas Reade, M.B., was the first to prove that epilepsy, mania, hemiplegia, paraplegia, amaurosis, hebetude of intellect, loss of memory, cranial neuralgia, suicidal propensity, paralysis of sphincters—all may be the offspring of the one disturbing cause—syphilis affecting the nervous centres."

"*Surgical Art and its Limitations.*"—In an interesting address on this subject to the Med. Soc. of London (*Lancet*), Mr. Gay, the President, "argued that the surgical art, as distinguished from the science, was behind its privileges in so far as the importance of the strictly mechanical part of surgical art was over-estimated to the exclusion of the proper consideration of various hindrances to the success of surgical procedures. Mr. Gay held that surgeons did not sufficiently study the extent and influences of these latter agencies. In illustration of his statement he instanced the nature of the wounds made in operations as of moment. It was not so much the extent as the seat of the wound in relation to the organic system of nerves, those wounds being most liable to disturb the system which were made in tissues supplied by the sympathetic; those made with instruments of the keenest edge, and therefore possessing the utmost evenness, in his experience, being the best disposed to unite and heal satisfactorily, the fact being that all wounds of a torn character have a marked unevenness, explained by the different degree of resistance offered by the lacerated tissues. Hence the incisions made by the surgeon, Mr. Gay believed, could not be too few or too slight, provided they secured the immediate end in view."

"*Ether Spray as a Cicatrizing Agent.*—M. Peuch, a distinguished French veterinary surgeon, quoted by the *Lyon Médical* from the *Jour. de Méd. Vet. de Lyon*, has used the ether spray with marked success in ulcers and divers cutaneous affections in the lower animals. Crusts, where they exist, are detached by the retraction of the subjacent tissues, the distressing itching of certain lesions is at once allayed, and an exposed surface is dried by the rapid evaporation without the irritation caused by atmospheric air. Complete congelation is not sought, and in the case of raw surfaces the spray is used only until the deep red of the tissues is reduced to a pale pink. Under these conditions, M. Peuch asserts that ether spray is a most valuable cicatrizing agent in wounds and ulcers, more especially those of an indolent nature. The experiment may be worth a trial in the human subject, as we have no very satisfactory means of either allaying itching, or healing chronic ulcers." —(*Medical Gazette.*)

"*Flexion as a Means of arresting Hemorrhage.*—Dr. Adelman reports six cases in which traumatic hemorrhage was permanently arrested after forcible flexion of the injured limb. The radial artery had been wounded in one case, the ulnar in two cases, and the palmar arch in one. One patient had severe bleeding from a wound near the elbow-joint, and the sixth case was one of gunshot wound of the right foot, followed at the end of eight days by severe arterial hemorrhage. In all instances there was complete recovery after the employment of forcible flexion.

"The following conclusions are laid down by the author:—

"1. Forcible flexion is a sure and ready method of hæmostasis in cases of wounds of the limbs.

"2. It should always be tried before having recourse to caustics or to a bloody operation.

"3. It may be tried after deligation of an artery has failed.

"4. This method is to be especially recommended in military surgery.

"5. It is desirable that the knowledge of this hæmostatic method should be vulgarized, so that the patient may be able to apply it whilst awaiting the coming of the surgeon."—(*Half-Yearly Abstract* and *Med. Gazette.*)

Aconite Poisoning.—Dr. J. B. Burnet reports in the *Medical and Surgical Reporter* two cases of recovery from aconite poisoning. The following will illustrate the treatment: "Catharine B., a strong, healthy girl; 17 years of age; took, through a mistake, of Fleming's tinct. of aconite and of tinct. capsicum, each two drachms. The result was almost instant prostration. Five minutes after the accident she was seen by the house physician, when she complained of an intense burning pain in the mouth, throat, and stomach, with nausea; had vomited but little. A peculiar numb, tingling sensation was felt in the extremities and over different parts of the body, but more particularly about the face, throat, and fauces. Says she feels faint, and is constantly sighing; breathing quick and sighing; pulse small, intermitting, and slow; skin moist; extremities cold; pupils considerably dilated. She was at once freely vomited with sulphate of zinc, large draughts of warm water being given between each emetic. This seemed to relieve her somewhat, but not entirely. A strong infusion of tea was now given, but with little satisfaction. The pulse grew weaker and slower; skin was moist; extremities cold; pupils dilated; breathing quick, and constantly sighing. The tingling is still felt, and there is some spasm of the lower jaw and fauces, with restlessness, faintness, and a constant tossing. At half-past six o'clock she had a severe convulsion, which lasted but for a moment. All her symptoms were now becoming worse; carbonate of ammonia and brandy were now freely given, and warm fomentations were applied to her extremities and over the stomach. This treatment was continued for about three hours very energetically, when she began to rally, but did not fully recover until ten o'clock in the evening. The next day she seemed quite well, and at no time since—now fifteen days—has she complained of anything that might be attributed to her taking the aconite."

Death from Suffocation.—"In San Francisco recently occurred a case of sudden death, which, in a medico-legal point of view, was highly interesting. A boy ten years of age died suddenly, shortly after having been whipped by his father. The circumstances seemed sufficiently suspicious to warrant an examination by the coroner, and, accordingly, Dr. Bentley carefully examined the various organs, and finding nothing to account for death, removed the stomach, in order to have its contents subjected to chemical analysis, and sewed up the body. The father had, in the mean time, been arrested, under the supposition that he had caused the death of the child. After completing the autopsy, from some singular after-thought Dr. Bentley was induced to examine the larynx; he therefore reopened the body and removed that organ. Upon making section of the larynx, there was found a large bolus of beef quite filling its cavity, fully accounting for death, and completely exoner-

ating the parent. It was learned subsequently that the boy had eaten freely of beefsteak before going to bed. In the night he was roused from sleep by an attack of vomiting, during which a piece of the imperfectly-masticated beef caught in the larynx, and produced suffocation.

"Another death from a similar cause occurred in the same city recently. The lad, however, was under the influence of chloroform at the time for the purpose of amputation at the shoulder-joint. He had, contrary to the doctor's orders, partaken of a heavy meal a short time previous to the operation, and a portion of the food being ejected by vomiting, lodged in the larynx, and produced suffocation in spite of every effort to prevent it."—(*Pacific Med. and Surg. Journ.* and *New York Med. Journ.*)

"*Carbolic Acid Poisoning.*—Dr. Wallace, of Liverpool, publishes an interesting paper on this subject in the *British Medical Journal*, in which he states that the most constant symptom is black urine. The urine does not become opaque; sometimes it is perfectly bright, and rarely contains albumen. It has been proved that this occurs in an equally marked form, whether tar, or some colorless preparation of it, be the agent employed. It has been noticed over and over again from carbolic acid."—(*Cincinnati Lancet and Observer.*)

Caustic Ethylates.—Dr. B. W. Richardson states (*Med. Times and Gaz.*): "The ethylates are crystalline substances, in which one atom of hydrogen of absolute alcohol is substituted by one of potassium or of sodium. Brought into contact with the body, the ethylates at first produce no action, but as they pick up water from the tissues they are decomposed, the potassium or sodium is oxidized, yielding caustic potassa or soda in the fresh state, and alcohol is reformed from the recombination of hydrogen derived from the water. I propose the employment of these ethylates as caustics. I believe they will be found to be the most effective and manageable of all caustics; and that in cases of cancer, when it is desirable to destroy structure without resorting to the knife, and in case of nævus and other simple growths, they will be of essential service. The ethylates can be held in solution with alcohol in various degrees of strength; the solution can be applied with a glass brush or injected by the needle, and a slow or quick effect can be insured, according to the wish of the operator. The ethylate of potassium is the most active agent."

"*Creasote Water as a Means of preserving Animal Tissues.*—M. F. Holbein remarks (*Berichte der Deutsch Chem-Gesellschaft*) that the application of creasote to the preservation of animal tissues, and of the entire bodies of animals, is sufficiently familiar, but that the following method may, nevertheless, prove of interest to zoologists. In order to preserve the whole animal, it should be macerated in water that has been well shaken up with ordinary creasote. The action should be allowed to continue for from one to several weeks, according to the size of the creature; and, if large, the belly should be laid open, though this is not necessary in birds, reptiles, and fish. It is then to be dried in the air, the proper position being given to it. As the body remains elastic after drying, it may be packed without any special precaution being taken. In the case of birds, the feathers will be found to retain

their color; and fishes preserve well both their form and color. Soft animals, however, like mussels, shrink considerably. The plan is peculiarly well adapted for fish collectors."—(*Lancet.*)

Microscopy: its Wonders.—"We have a glass slide upon which, in a space less in diameter than the head of a small pin, are arranged, in perfect symmetrical order, *one hundred and four diatoms.* These wonderful vegetable or animal organisms are placed upon the glass in accordance with exact or scientific classification, and represent most of the existing and extinct species. They are not frustules or fragments, but perfect specimens, so admirably prepared that when the glass is placed under the microscope with a first-class half-inch objective, they are seen each distinct and perfect, with all the wonderful and beautiful curves, lines, and cells, which so astonish every observer. This great work of microscopic art is due to the consummate skill of J. D. Möller, a German microscopist. How he is able to accomplish this feat, is no better understood than the process or art by which M. Nobert of Pomerania is able to rule upon glass lines so fine that it requires more than twelve thousand to cover the space of an inch. The little speck upon the glass in which are arranged these beautiful organized bodies, is scarcely perceptible to the naked eye: and yet, in this infinitesimal speck, the bodies are grouped with ample spaces between, and the order of arrangement and method is the same as would be observed by a scientific entomologist in grouping one hundred specimens of moths or butterflies upon a sheet of paper. In the speck, a whole volume of scientific information is embraced: it is an anatomical and palæontological museum, which can be studied only by the aid of a microscope of the most perfect construction."—(*Boston Jour. of Chemistry.*)

Iron for Purifying Water.—"It is claimed that metallic iron affords the readiest and simplest means of disinfecting water and of keeping it fresh. The water of the Thames, taken to sea in iron tanks, soon becomes perfectly sweet and remains so during a long voyage. A small piece of iron or a few nails in the water in which cut flowers are put will keep the water sweet. The experiment has been tried of putting some iron filings in a vessel with a very small quantity of water and then placing a leech therein. After six months had passed, the water was found quite fresh and the leech alive and healthy. These facts are curious and suggestive."—(*Ibid.*)

Sore Mouth from Galvanized Iron Pipe.—It is stated (*Ibid.*) "A. O. N. writes us from Norway, Me., as follows: 'In my family we use water drawn through one hundred feet of galvanized iron pipe. Since it was put in, the whole family has been troubled with *very sore mouths.* It appears different from common canker, having a more extended and severe inflammation. Is this due to the galvanized iron pipe?' Probably the zinc salt formed in the water is the *chloride,* which has *caustic* properties of extraordinary character. The affection of the mouth which you describe is precisely what we might expect to result from using water containing minute quantities of chloride of zinc."

Ammonia for removing Grease-Spots.—"A very cheap and simple fluid for removing grease-spots from woolen clothes may be made by

dissolving one ounce of crystallized carbonate of ammonia (the sesquicarbonate) in one pint of water. Scour the woolen fabric with a piece of cloth or sponge wet in this solution. It is not necessary to follow the solution with water, or to do anything but let the cloth dry spontaneously. As the sesquicarbonate of ammonia of the shops is apt to have lost part of its ammonia and to have become an inert bicarbonate, we advise adding to the above solution one drachm (a teaspoonful) of aqua ammonia. Made thus, the preparation does not really cost, *for materials*, more than three or four cents a pint, though, of course, it costs more to prepare and dispense it. But a grease-spot removed by it never reappears. Of the hundred preparations for this purpose which we have made and tried, none has ever been so efficacious."—(*Ibid.*)

—

"*Magnesium as a Reducing Agent.*—Metallic magnesium in the form of powder is a powerful reducing agent. A solution of chloride of platinum is instantly decomposed by it at ordinary temperature, and with strong evolution of hydrogen gas, the finest platinum sponge separates. Pure gold in powder can also be precipitated from the terchloride, and even chloride of zinc is decomposed and the metal separated by magnesium. This use of magnesium is destined to become a very important one."—(*Scientific American.*)

—

"*Steady Air Blast for Laboratory Purposes.*—By Prof. Le Roy C. Cooley, Ph.D.—In the use of the blowpipe, and for many other purposes in the laboratory, it is desirable to have some automatic source of air. An apparatus for this purpose ought to furnish a *steady* current under *pressure* which may be *varied* and *controlled* by the operator.

"A simple and inexpensive arrangement, fulfilling these conditions, has been in almost daily use in my laboratory for nearly three years. Although devised especially for use with the blowpipe, yet its applications are so numerous and varied that it may be recommended as a valuable piece of furniture for both the laboratory and the lecture-room.

"The essential parts of the apparatus are an air-tight tank from which air is to be driven, and a regulator by which the current is to be made uniform and its force determined.

"The tank may be made of metal or of wood, and of any size and shape desirable. A wine-cask or beer-barrel answers the purpose admirably. The water, by which pressure is to be obtained, must enter the side of the tank *near the top;* the pipe which supplies it extends almost to the opposite side of the tank, in order to avoid the unpleasant rattle of falling water. A glass tube extending along the height of the tank, both ends opening into the interior, continually announces the height of water, and informs the operator of the amount of air at his disposal. Besides these tubes, the tank is supplied, at the top, with a stop-cock and tube, by which the air blast is delivered, and at the bottom with a large faucet, by which the tank may be quickly emptied. The arrangement of this tank, except in one noticeable feature, does not essentially differ from others already well known.

"The regulator, by which the pressure is steadied and controlled, is peculiar and efficient. It consists of a small-sized vessel with three openings in the top, each supplied with a tube which reaches nearly to the bottom of the vessel. One of these tubes receives water from the

hydrant, another delivers it into the tank, while the third carries the valve which regulates the pressure. The water entering the vessel through the first tube until it covers their lower ends, will, of course, be driven up the other two with equal pressure, and their upper ends being on the same level, it will issue from both always with equal force. Let the valve-tube be covered closely, and the pressure needed to lift the cover will be the pressure exerted to push the water into the tank, and will also represent the force of the issuing air-jet The cover or valve is simply a small tin cup, with its bottom lined with rubber, inverted over the smooth open end of the tube. It is fastened to an arm hinged upon some permanent part of the apparatus, by which free vertical motion is secured, and any other prevented. Upon the flat top of this valve, weights of any denomination may be placed, and the force of the blast correspondingly increased, limited only by the power of the stream from the hydrant. The principle known as the pneumatic paradox prevents the pressure from being accurately *measured* by the weight of the valve; but, in practice, this is found to be of no importance, since it does not hinder the quick adjustment of the pressure by varying the weights. The valve-tube should be considerably larger than the supply-pipe, that the relief may the more easily adjust itself to the supply. Its upper end should pass through the bottom of a vessel by which the water may be caught, and from which it may be carried off by a tube, into the cistern.

"With this arrangement it is found, that however variable the pressure of water from the hydrant, the steadiness of the air current, after the first few moments, is not affected, and that however powerful may be the stream of water, the force of the blast will be delicate or strong, according to the weight of the valve.

"Any form of blowpipe may be used with this apparatus, but the Bunsen's blowpipe will be found most advantageous, not only for the ordinary purposes of the instrument, but also for many others. As a source of long-continued, steady heat, this arrangement is unequaled. It will work for hours with the most gentle flame, or may be made to operate with the fury of the blast-lamp at will."—(*Jour. Franklin Institute.*)

Metals Separated by Centrifugal Force.—The *American Artisan* says: "Among inventions recently patented, one of the most unique is a method of separating the component metals of an alloy. It will probably prove much less practicable on trial than it appears in theory, but it merits notice, both from its ingenious character and the simple nature of the means employed in carrying it out.

"The invention is designed to effect a concentration, separation, and refinement of metals having different specific gravities, when mixed or alloyed and brought into a state of fusion; and the improved process consists in subjecting the fluid-metal mixture or alloy to rapid rotation in a close receiver, turning on its axis, until the different metals of various specific gravities are mechanically concentrated, separated, and refined by the action of the centrifugal force, which will cause the particles or atoms of greatest specific gravity to range themselves on or near the periphery, and those of less specific gravity to arrange themselves in rims or bands concentrically, in the order approximately of their respective specific gravities. When the metals have thus been concen-

trated, separated, and refined, they may be gradually cooled by abstracting or taking from the furnace the applied heat necessary for their fused condition while still rotating, until, when solidified, the block may be removed and the metals separated or cut from each other, according to their respective values, by the chisel, tool, or lathe, or in any other analogous manner; and these metals, thus approximately concentrated, separated, and refined, may again be subjected to the same treatment with others before thus treated, and of a like or similar value, until a more perfect, complete, and valuable concentration, separation, and refinement are effected."

"*Wax-Milk.* Herman Koch. To the *Druggists' Circular.*—After carefully perusing the article on wax-milk, contained in the July issue of your journal, I concluded to try the experiment of making and using the article named, but found the result very unsatisfactory. I find that this so-called wax-milk, in the first place, does not contain wax enough for most practical purposes, and that furthermore its corrosive, alkaline nature will interfere with many uses, such, for instance, as renovating finely-polished furniture, picture-frames, etc. If paper is to be impregnated by means of this milk, several coats are required, which dry slowly, and, on account of the friction in applying the same, are very apt, especially in the case of glazed or sized paper, to destroy the smooth surface. The necessity of immersing the sheets in water to remove the uncombined alkali is an additional objection to this process.

"After having obtained the above results, I concluded to try other 'solvents' of beeswax, which, while not too expensive, would evaporate without leaving any smell or residue behind. Turpentine I found defective in both these particulars, especially when not quite fresh.

"Benzine will dissolve a large proportion of wax, especially when heated to the boiling point, which can be easily effected without danger of explosion, by placing a bottle containing the liquid in water heated to between 150° and 200° F. The solution, however, will deposit a cloudy sediment upon cooling. Nevertheless, it can be readily used for producing wax paper, or, in fact, for all manipulations where the object is to produce a thin, uniform coating of wax on any foreign substance. The benzine evaporates completely inside of a few hours without leaving a trace of smell behind.

"The best solvent, however, I found to be bisulphide of carbon. This substance readily produces a concentrated clear solution of wax, even without the aid of heat, and evaporates so quickly that wax paper produced by its aid is ready for use within a few minutes after being impregnated This latter manipulation should be performed quickly and on both sides by means of a soft sponge.

"This solution will be found especially adapted for coating gypsum statuettes and other similar work.

"It may also be used for closing up small cracks in furniture prior to being varnished or painted, as also for bedsteads to exclude bedbugs. For the former purpose it may be colored to harmonize with the furniture.

"The use of this 'wax-varnish' will be found very convenient, especially during the summer months, when gas-stoves and charcoal-furnaces are in general use, which will not produce the uniform heat over a large surface that is necessary to make good wax-paper according to the usual plan."

Artificial Ivory.—"In a large show case at the fair of the American Institute we saw some billiard balls, rings, brooches, knife-handles, and other objects resembling ivory, which, upon close inspection, proved to be made of gun-cotton. Here was the application of Schönbein's discovery that the original inventor could never have anticipated. The solubility of gun-cotton in a mixture of alcohol and ether has long been known, but that a tincture of camphor would produce the same effect has not been suspected until recently. It now appears that moist camphor and cotton pulp are mixed together, and put under an hydraulic press, when the mass so closely resembles ivory that it can be made into billiard balls, buttons, and, in fact, everything for which ivory is employed. The cotton can be colored without injury to its texture. It is a curious fact that the vapor of camphor decomposes gun-cotton with evolution of red fumes—in fact, the cotton is decomposed explosively. What the action of the camphor is on the gun-cotton has not been explained. It would appear as though the nitrogen of the pyroxyline was expelled by it in the form of binoxide, and this in turn took oxygen from the air and became nitrous acid. The matter is worthy of investigation, as perhaps offering important applications in the arts."—(*Sci. Amer.*)

Coral-Lignin.—According to the *American Artisan*, "the so-called 'coral-lignin' is made by macerating potatoes, carrots, or turnips in water containing about eight per cent. of sulphuric acid for from twenty-four to thirty-six hours; then wholly removing the acid by repeated washings, and drying the product in warm sand. The substance is said to closely resemble meerschaum, and by treatment with caustic soda may be made to assume the appearance of horn."

"*Tungstate of Soda to form an Elastic Mass.* Dr. Sonnenschein.—When glue, in thick solution, is mixed with tungstate of soda, and hydrochloric acid is added, there is thrown down a compound of tungstic acid and glue, which, at from 30° to 40°, is so elastic as to admit of being drawn out into very thin sheets. On cooling, this mass becomes solid and brittle; but, on being heated, it becomes again soft and plastic. This material has been successfully employed, instead of albumen, in calico-printing, in order to fix the aniline colors upon cotton. The further applications of this substance are in tannin, but the resulting leather becomes as hard and stiff as a plank of wood. The preparation is recommended as a lute or cement."—(*Chem. News.*)

"*Tin-foil for preserving Substances liable to change on Exposure to Air.*—Tin reduced to thin sheets has for many years been employed for preserving a great number of substances from the action of air and moisture. The thin leaves (foil) of this metal are essentially repellent to moisture. When cemented to the surface of damp walls, they protect the paper-hangings which may be afterwards applied, and they are in like manner used for lining the interior of boxes and drawers in which dried medicinal leaves and flowers are kept. It has long been the practice to inclose chocolate in tin-foil, to prevent the fatty matter contained in it from soiling the paper which forms the outside wrapper; in the same way butter of cacao itself is preserved, and some sorts of

sweetmeats, sausages, and cheese are among the articles similarly protected. Tobacco-pouches are lined with tin-foil to preserve the flavor and humidity of the tobacco. Cakes of opium are kept in a moist and uniform state by wrapping them in this material, and bisulphate of soda is kept in the same way, for use in making artificial Seltzer water with Briet's apparatus. Lastly, on account of the opacity of tin-foil to the rays of light, bottles are coated with it for the purpose of excluding light from vegetable substances which would be injured by its action.

"Notwithstanding the knowledge of all these facts it might be said that the application of tin-foil for the preservation of substances liable to change is still rather limited, and there seemed to be a prospect of its admitting of a more general use than has hitherto been made of it. At the same time there was an absence of any precise experiments for the purpose of determining in a scientific manner the degree of impenetrability of tin-foil. Having been engaged for some time in the investigation of this subject, I have obtained the following results:

"For many years past I have observed that cacao butter, which readily becomes rancid even when kept in bottles into which it has been introduced in the melted state, if the bottles be opened from time to time, does not undergo the same change when moulded in tablets and wrapped in tin-foil. This fact, which was confirmed by many observations, and could only be explained by assuming the impenetrability of tin-foil to atmospheric air, formed the starting-point for some experiments in the same direction, which proved satisfactory. Thus, a piece of well-burned quicklime, inclosed in a double wrapper of tin-foil, was exposed to the atmosphere of the laboratory by the side of another similar piece which was exposed without protection. While the latter became slacked, that which was protected by the tin-foil, and weighed 92·2 grams on the 1st of December, 1867, had only gained 3 decigrams in weight at the expiration of one month, and after being kept until the 25th of March, 1868, it had only increased to 94 grams. It had thus gained only 1·8 grams in four months. On being then taken out of its metallic envelope much heat was developed from absorption of moisture, and it fell into powder.

" Satisfied by this experiment of the efficacy of tin-foil for preserving bodies from the action of air and moisture, it seemed probable that substances the most susceptible of change might be kept in the same way. It was found that substances so deliquescent as chloride of calcium and liver of sulphur, and efflorescent salts, such as carbonate and sulphate of soda, remained almost unchanged when wrapped in tin-foil, increasing or diminishing only to a few thousandths of their weight in several weeks.

" Other experiments were made of a more precise character. It is well known that fresh lemons become rapidly dried and ultimately hard when exposed to the air, and they also become parched and covered with mould. I had endeavored to prevent this drying and moulding by placing the lemons in close vessels, in dry air, in sand, and also in bran; but none of these methods proved efficacious. Thus, for example, in twenty-one days the lemons lost on an average 17·33 per cent. of their weight in sand, and 17·13 in bran. Experiments were made for the purpose of ascertaining the effect of enveloping the fruit in tin-foil, and also of coating it with a film of collodion. Some of the fruit prepared in each way, and some unprepared, was weighed, exposed to the air,

and again weighed at intervals of a month. This method was applied to lemons and oranges, and the following results were obtained:

"1. The unprepared fruit became rapidly dried. In two months the lemons had lost 42 per cent. of their weight, while oranges, in the same time, had lost 26 per cent.

"2. Collodion, when applied to the fruit alone, exerts but a feeble preservative influence in retarding spontaneous evaporation. In two months lemons coated with collodion had lost 29 per cent. and oranges 22·5 per cent.

"3. Tin-foil almost entirely prevents the drying of the fruit. In two months, lemons had only lost 1·58 per cent. and in three months 3·16 per cent. In one case the loss was only 0·92 per cent. during the longer period. Oranges lost about 5 per cent. in two months. On the removal of the metallic envelope, the fruit was found to be as fresh and fragrant as when the experiments were commenced. These observations and experiments will tend to show the remarkable power of tin-foil in preserving substances inclosed in it from the influence of air and moisture derived from air, and may induce those who are interested in the subject to extend the application of this preservative means.—*E. Baudrimont, in the Jour. de Pharm. et de Chemie.*"—(*Scientific American.*)

—

"*Test of Iron and Steel by the Microscope.*—Dr. Schott has subjected a large number of samples of iron and steel to microscopical examination, and gives as the result of his observations, that on the regularity and the smallness of the crystals of any specimen, depended the good properties of the metal. In the good qualities also the crystals were found placed very regularly near each other."—(*Ibid.*)

—

"*Glue which stands Moisture without Softening.* Dr. Böttger.—Dissolve, in about eight fluidounces of strong methylated spirit, half an ounce of sandarac and mastic; next, add half an ounce of turpentine. This solution is then added to a hot, thick solution of glue to which isinglass has been added, and is next filtered, while hot, through cloth or a good sieve."—(*Polytech. Jour.* and *Chem. News.*)

—

"*Lead-Pencil Drawings, Tracings, and Writing, and also Charcoal and Chalk Drawings, Fixed.*—W. Wolanek states that when the paper containing drawings or writings made with lead-pencil or charcoal is painted over, on the reverse side (where no writing or drawing exists), with a moderately strong solution of bleached shellac in alcohol, the drawings or writings made with lead-pencil, etc. become thoroughly fixed, so that they cannot be rubbed off."—(*Ibid.*)

—

"*Iron and Hydrogen.* Dr. Klein.—The author, a pupil and collaborator of Professor Jacobi, of St. Petersburg, states that the iron obtained by electrolysis is not, as has been often thought, the pure metal, but, on the contrary, is a compound or mixture of iron and hydrogen, which, when heated to redness, gives off an enormous amount of that gas, and becomes, while greatly increasing in bulk, a silver-white, very soft, ductile, and malleable metal, which decomposes water readily below its boiling-point and oxidizes most rapidly."—(*Les Mondes* and *Chem. News.*)